

Outside House Paints
Trade Sales
301 Line
American Zinc Sales Co.

Mr. S. W. Lampert, Lab.
Mr. W. F. Singleton, Lab.
Mr. S. L. McSorley, Wilm. D-8032
Mr. John Marshall, " D-7014
Mr. J. W. Nestor, " D-7018
Mr. S. Graves, Phila. Lab.

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OUTSIDE HOUSE PAINT WHITE

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This report covers work completed on Investigation No. WT-234 involving the use of AZO ZZZ-11 Zinc Oxide in Outside House Paint, and also the examination of our present formula in respect to application properties, gloss and flashing.

Use of Azo ZZZ-11 Zinc Oxide in 301-836

It has been previously established that the use of certain grades of zinc oxide in combination with Basic Lead Sulfate will produce a paint with durability equal to that obtained through the use of 35% Leaded Zinc. Azo ZZZ-11 Zinc Oxide is among these durable Zinc Oxides. Paints of 301-836 type were made in the laboratory substituting ZZZ-11 Zinc Oxide/W-69 Basic Lead Sulfate for all or part of the W-18 Leaded Zinc. A direct substitution for all the W-18 results in heavier consistency at equal solids or lower solids at equal consistency. In P-301-P-69227 where such a replacement was made solids were lowered from 74% to 64.3%, by volume. Flashing is equal to standard 301-836.

An attempt was made to compensate for this increase in consistency by varying the bodied oil/limpid oil ratio in the formula. The ratio was changed from 43/57 Bodied Oil/Limpid Oil to 25/75 in P-301-P-69214. This compensated for the increased consistency and resulted in improved application properties but gloss was lowered and flashing was not improved. P-301-P-69216 substitutes a lower bodied oil (V0-114) for V0-5168 in order to compensate for the increased viscosity and keep the ratio of bodied oil/limpid oil close to the normal 43/57 figure. However, this substitution did not improve application properties or flashing.

The use of low oil absorption extenders was then investigated. In P-301-P-69218 the use of 50% W-34 Barytes in place of W-4 asbestos produced the desired adjustment in viscosity to compensate for the use of 100% ZZZ-11 as the Zinc Oxide content. A much higher degree of gloss was obtained with slight flashing but application properties were affected by producing a noticeable drag in brushing.

The use of W-71 Mineralite in place of 33% of the W-4 Asbestos also affected a correction in the viscosity of the pro-

Flashing is lower variation
or "stickiness" on panel

duct at the proper solids P-301-P-69239. However, no improvement resulted in gloss, application properties, or flashing tendency.

The effect of using W-68 Basic Carbonate White Lead in place of W-69 Basic Sulfate White Lead in combination with ZZZ-11 Zinc Oxide was also investigated. In P-301-P-69235 the use of W-68 produced a product of lower consistency at equal solids than did W-69; or a reduction of 11% in thinner requirement at equal consistency.

Samples of Plant batches made by Jaegle Paint Co. with 25% & 50% of the ZnO added as ZZZ-11 and used in conjunction with Basic Lead Sulfate and a low oil absorption extender were evaluated for properties. Brushing tests proved them to be at least equal to standard 301-836 production.

Products were made at a lower pigment volume to observe the effect of this change on film properties. A reduction in pigment volume from 35.7% to 32.7% in P-301-P-69230 resulted in slightly improved application properties and slightly higher gloss although flashing was equal to standard.

The Effect of Change in Type of Oil

A series of paints was made varying the type of limpid oil used, i.e., P-301-P-94552, all H-259 Refined Linseed Oil; P-301-P-94553, all H-598 Pittsburgh 500 Oil; P-301-P-94555, 50/50 H-259/H-59 Soya Varnish Oil; P-301-P-94550, 50/50 H-598/H-59, and P-301-P-94554 50/50 H-259/H-598. There was no noticeable difference in film properties, and application properties were very nearly equal.

The Effect of Adding Oil to Packaged Paint Before Application

Raw linseed oil was added in amounts of 1/2 Pt., 1 Pt., and 1 quart per gallon of Outside White. Application properties were improved slightly. The addition of 1/2 Pt. oil per gallon did not noticeably improve gloss or flashing. The addition of 1 Pt. oil per gallon improved gloss and reduced flashing. The addition of 1 quart oil per gallon practically eliminated all traces of flashing. The application of the above practice by painters in the field has probably reduced the flashing tendency of our Outside White to such a degree that complaints are few.

Use of W-19 Zinc Oxide in Outside White

Laboratory and Plant batches of Outside White House Paint 301-836 and 301-838 were made using W-19 Zinc Oxide/W-69 Basic Sulfate White Lead combination as 50% of the Leaded Zinc content of the formulas. No change in solids, film properties, or application properties resulted from the substitution. P-301-P-94546 and P-301-P-94587. Use of this pigmentation as an alternate method of manufacture has been recommended in Release Letter 610-Y.

Use of W-34 Barytes in 301-838

The use of W-34 Barytes as 25% of the extender in 301-838 results in higher gloss and almost complete elimination of flashing tendency. Application properties are equal to standard. However, the substitution results in lower consistency at equal solids. A raw material cost increase of .12¢ per gallon results when packaged at equal consistency (P-301-P-94572). The use of heavier bodied oils to offset this did not give products with good film properties and application properties were adversely affected (P-301-P-94581).

Comparison of 301-827, 301-836, 301-838

Numerous brushing tests were conducted by A.C. Krause on various Outside House Paint formulas. Results are recorded as follows: in Notebook #3197 on page 140; in Notebook #3281 on pages 42 & 43 and in Notebook #3296 on pages 19, 20, 22, 26, 38, 43, 45, 55, 62, & 66. In general, tests showed (1) that 301-827 retains had better application & film properties than 301-836 retains. Also, (2) older retains had slightly better application and film properties than recent ones. (3) 301-838 showed more flashing than either 301-836 or 301-827 although application properties were equal to those of 301-836, and (4) Laboratory prepared material is consistently higher in gloss than factory batches of the same formula.

The above summarizes the work completed. However, for detailed breakdown of formulas Notebooks #3281 and #3296 should be consulted.

PHILADELPHIA LABORATORY

O. R. Volk

O. R. VOLK

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