*****

THE NATIONAL BUREAU OF STANDARDS
UNITED STATES DEPARTMENT OF COMMERCE
WASHINGTON, D. C.

May 15, 1936.

PAINT FOR PRIMING PLASTER SURFACES

This is a brief digest of Miscellaneous Publication No. 137, "Paint for Priming Plaster Surfaces", (August 31, 1932),[1] by Percy H. Walker and E. F. Hickson, issued by the Bureau of Standards, and of Federal Specification TT-P-56, "Paint: (For) Priming Plaster Surfaces (Plaster Primer and Surfaces)".[1]

The first publication presents information obtained in experiments undertaken to furnish the basis for establishing a Federal Specification and the second presents the specification itself.

Materials tested: Thirty-three commercial priming-coat materials were used, representing types then on the market. These were taken from original containers as furnished by the manufacturers.

Seven experimental paints that did not represent any particular brand, which were made in the laboratory, were also considered. These are fully identified in Miscellaneous Publication No. 137.

Laboratory tests of varied natures were conducted to investigate the functions, as claimed for them and possible failures of the paints. Some of these tests showed such frequent lack of agreement as to indicate certain types of laboratory tests are of doubtful value.

It was concluded that a specification for a primer could best be based almost entirely on physical or performance tests rather than on requirements of composition. Hence, a suggested specification was recommended together with a "comparison primer". This suggested specification, with some modifications, has since been accepted and established as Federal Specification TT-P-56.

---

[1] Obtainable from Superintendent of Documents, Government Printing Office, Washington, D. C. (Price 5 cents)

052236-Z

Of the commercial primers tested, more than one third would have satisfactorily met the suggested specification. Of the seven experimental paints, two proved entirely satisfactory, one of which was adopted as the "comparison primer". All primers having vehicles of raw linseed oil, with drier and thinner, proved unsatisfactory.

The characteristics necessary to secure a desirable material, as set forth in Federal Specification TT-P-56 are, in substance, as follows:

Grades and Types: The specification covers one grade of ready-mixed white paint of bodied oil or varnish type for interior use as a primer on old or new unpainted plaster surfaces. The primer is intended to stop the suction of porous plaster with one coat, thus preventing absorption of the second coat which would permit finishing with a third coat at the most.

Pigments: A wide latitude is given in the selection of pigments, provided they pass the requirement for hiding power. Some white pigments must be used in any case.

Liquids: A mixture of processed drying oils or varnish with drier, turpentine, volatile mineral spirits or a mixture thereof should contain not less than 42 percent non-volatile matter.

Paint: It should be well ground, and should not cake, liver, thicken, skin or settle badly. It should be readily stirred to a smooth paint and should keep well in the can after repeated use.

Color: White, unless otherwise specified.

Brushing properties: The paint should be of proper consistency when taken from the can; except when definite instructions by the manufacturer requires the addition of thinners (turpentine, etc.). Pastes or semi-pastes are not contemplated under this specification. It should not pull nor set too quickly under the brush and should flow and level readily so as to present as uniform a coat as the "comparison primer".

Hiding power: The paint, as taken from the can, should show a wet hiding power by the brushout (checkerboard) method of not less than 110 square feet per gallon. If it has been recommended by the manufacturer that thinner be added before using, the hiding power requirement shall apply to the thinned paint.

Gloss: When brushed on tin, it should, when dry, compare approximately with the "comparison primer".

Set to touch: When brushed on tin, it should set in not less than 1 hour nor more than 4.

Dry hard (suitable for recoating): It should dry hard on tin in 18 hours.

Sealing properties and ability to prevent spotting of second coat: These very important properties can best be ascertained by comparing submitted products with the "comparison primer" and two "reagent paints", formulas of which are shown below.

This may be done with two pieces of white blotting paper, each 12 inches square. Brush one liberal coat of the sample and the "comparison primer" on the separate sheets of blotting paper. Let dry for 24 hours after which, brush one half of each primed surface with a finish coat of oil gloss "Paint A", and over the other half a finish coat of flat oil "Paint B". Again dry for 24 hours. The resulting finishes should then be as uniform and as glossy and flat, respectively, over the surface primed with the sample, as over the surface primed with the "comparison primer".

COMPARISON PAINT FORMULAS
(Numbers given refer to Federal Specification numbers)

"Comparison Primer"
100 pounds stiff paste white lead in oil, TT-W-251, type C.
4 gallons interior varnish, TT-V-71.
2 gallons kettle-boiled linseed oil, JJJ-O-331, type A.
3/4 gallon turpentine, LLL-T-791.

"Paint A" (oil gloss finish coat)
100 pounds stiff paste white lead in oil, TT-W-251, type C.
3 gallons raw linseed oil, JJJ-O-336, type A.
1 pint drier, TT-D-651, type I.

"Paint B" (flat finish coat)
100 pounds stiff paste white lead in oil, TT-W-251, type C.
1 3/4 gallons turpentine, LLL-T-791.
1 pint interior varnish, TT-V-71.
1/2 pint drier, TT-D-651, type I.

While the "comparison primer" is in itself a good primer, in fact one of the best made of white lead, it is here considered simply as a standard for comparison with a certain specification. It should be further understood that this applies only to paint used for priming plaster and not to finishing coats. Paints "A" and "B" are to be regarded only as "reagents" for testing. Paint "A", being an outside white lead paint, would turn yellow on interior surfaces and while Paint "B" is a good eggshell flat white lead paint, other white lead paints can also be used on plaster walls.

Detailed methods of sampling and testing for flexibility and adhesion, caking, weight, etc., are provided in Federal Specification TT-P-56.