

Glidden Company
Gloss Emulsion Paints

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MEMORANDUM REPORT #M-29:

EVALUATION OF GLIDDEN'S "SPRED-LUSTRE"

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The subject product has been evaluated and analyzed to determine (1) what sort of competition we will have to meet when we put a gloss emulsion paint on the market and (2) how Glidden has obtained some of their more desirable characteristics.

Summary:

The "Spred-Lustre" seems to be a fairly good companion product for the emulsion type flats and is superior to anything we have to offer at the present time in gloss and film hardening rate, although inferior in tack-free drying time and hiding power. By comparison with medium or high quality gloss paints or enamels, however, it is an inferior product. We feel that an improvement in application properties vs. either "Spred-Lustre" or our product will be necessary before a gloss emulsion paint will gain wide acceptance.

Analysis of the product shows it to be a high protein, very low oil paint, with probably large amounts of soap present.

Possibly it is pigmented in the external or water phase. Several speculations as to its composition are noted below.

Properties:

A detailed evaluation of the product by Miss Stevenson shows the following:

Gloss: Considerably higher than our semi-gloss emulsion paints, slightly higher than our gloss emulsion, and nearly equal to a high gloss, high quality architectural enamel.

Color: Very yellow.

Tack-Free Drying Time: 26 to 28 hours at 10 to 20% and up to 42 hours at 50% relative humidity, although a slight "pressure tack" remains for at least a week. The film toughens

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rapidly, however, and is superior to our semi-gloss emulsion which is, by comparison, soft and "cheesy" at 24 hours. (See drying curves, book 3036, page 13).

Film Texture: Considerable seed present in all samples.

Application Properties: Similar to our semi-gloss emulsion. The product has too much slip and not enough "guts" under the brush for a trim enamel; it wipes off high spots too easily. The lap time is short and the lap is gummy. It is interesting to note that on the label Glidden describes the product only as a wall finish. The leveling is only fair.

Hiding Power: When adjusted to equal solids content, it is comparable to our semi-gloss emulsion. However, the product is very definitely yellower than ours, which means that if the two were adjusted to equal color, the "Spred-Lustre" would be definitely inferior in hiding, probably in the range of our lower pigment volume "gloss" emulsion. It is probably 25 to 50% inferior to Super White.

Scrub Resistance: No quantitative data are available, although a qualitative examination of our first brush-out indicates surprisingly good resistance to scrubbing away. Because of the "pressure tack", the film smudges badly after aging one week and is difficult to clean.

Analysis:

Analysis of the product as reported by Mr. O'Connor (book 2997, pages 151 to 168) shows the following:

Pigment (Ash): 93% TiO_2 plus traces of lead, zinc aluminum and cobalt. The lead and cobalt are undoubtedly present as driers. Pigment/total binder = 88/100.

Vehicle:-

Protein (soya)
Oil Glyceride

29%
24.6% (Not linseed,
DCO or CWO)

Rosin Glyceride

41.0%
94.6%

Phthalic Anhydride
Solvents or "Introvers" ¹
pH of Paint

Negative
None
9.7

The component relationships by comparison with our semi-gloss emulsion are as follows:

	<u>"Spred-Lustre"</u> <u>(By Analysis)</u>	<u>DuPont</u> <u>(By Formula)</u>
P/B	88/100	79/100
Protein/Olec-resin	29/71	10/90
Oil/Resin	38/62	62/38
Solids as Packaged	55.3%	63.5%

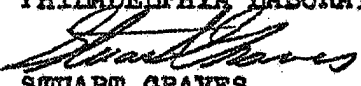
Electron Microscope examinations made by Dr. Shapiro do not show conclusively whether the pigment is in the internal or external phase but they do show definitely better dispersion (less clumping) than in our products.

The acetone extract (vehicle less the protein) is high in rosin content and shows 0.5% ash, with sodium present. The vehicle, freed from protein, is readily emulsifiable in water. All of these facts show the presence of a strong emulsifying agent, probably a soap, and we infer that a large proportion of rosin soaps may be present. Possibly the oil in the oleo-resinous portion is tall oil.

The very high pigment/resinous phase binder ratio would be difficult to duplicate from the operating standpoint (stiff mill base) and indicates a strong possibility of an external phase pigment, dispersed with a large quantity of soap and protein.

From the very short oil length and high protein content of the vehicle, we would predict rather poor general durability and cracking resistance.

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