Investigation L-333
Lehigh Valley R. R. Co.
Complaint L-179"
W-318 Rubine Red
W-322 Bon Toner

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Philadelphia Laboratory
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MEMORANDUM REPORT #M-130

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88-35575 DARK RED "DULUX"
LEHIGH VALLEY RAILROAD CO.

This report covers a visit made by Mr. Edward Miller of the Sales Dept. and the writer to the Sayre, Pa., shops of Lehigh Valley to investigate a complaint involving the darkening of 88-35575 "DULUX" when cleaned with ONC Cleaner at their various terminals.

Lehigh Valley formerly used 88-660 "DULUX" Red(W-360 Toluidine/W-308 Madder Lake W-382/Cadmium Red pigmentation) with very satisfactory results. A black color coat was used in the window areas. Within the past two or three years the management decided to change their color to a more individual one since 88-660 resembles the Pennsylvania Tuscan Red. Since "DULUX" was not available they purchased 259-35575 "Duco" Red (W-896 Maroon Toner/W-873 Infrex Maroon) but changed to "DULUX" as soon as we could supply it. Three batches of 88-35575 (W-318 or W-322 BON Toner/W-360 Toluidine) were produced:

P-51546	115 gals.	12-16-46
P-48070	90 gals.	2-7- 46
P-46182	555 gals.	4-22-47

Their repaint program called for refinishing approximately 225 passenger cars and 60 of these have already gone through their shops. They have found the cars finished with 88-35575 are darkening when washed at their car cleaning terminals due to the sensitivity of this product to ONC Cleaner which they have used for several years.

Previous to our visit, we had established in the laboratory the fact that this product darkened when cleaned with ONC Cleaner, the rapidity depending upon the strength of the solution used. ONC Cleaner, manufactured by the Wilson Imperial Chemical Co. is an acid type cleaner showing positive tests for oxalates and Chlorine indicating the presence of oxalic acid and hydrochloric acid, and has a PH value of 1-2. We had also found that the 88-35575 was not darkened by alkaline cleaners, such as Oakite #70 a mild inhibited cleaner of PH 8-9, although some very slight effect on the color toward a lighter shade was noticeable. We determined that the use of a weak solution (2%) of tri-sodium-phosphate would remove the darkening caused by the ONC Cleaner but the recovered color developed a slight iron oxide tone.

At Sayre, Mr. S. E. Printz, Engineer of Tests, exhibited panels showing the effect on their cleaning solution on the finish. We showed them panels indicating the possibility of recovering the damaged cars by the use of TSP but after considerable discussion this idea was thrown out for the following reasons:

(1) Lehigh Valley was satisfied with the cleaning properties of ONC Cleaner and did not care to change to another type.

(2) Even though they might change to an alkaline type cleaner, the assurance that only this type would be used at their car-cleaning terminals was impossible due to lack of supervision of the operation. In an emergency they would use any available cleaner, whether acid or alkali, in order not to hold up cleaning of cars.

During our discussion Mr. Printz pointed out that Du Pont was familiar with the fact that Lehigh Valley was using ONC Cleaner and had collaborated in setting up their present cleaning procedure years ago. Particularly in view of this, he felt it was duPont's responsibility to supply them with a product which would satisfactorily withstand their cleaning process and that we had furnished them with a product which was not satisfactory with their cleaner without advising them of its deficiency.

No cars were available at the Sayre yard which illustrated the difficulty complained of, but we were able to inspect cars on the eastbound Black Diamond during the short lay-over there and at other points enroute since we were on that train on our return trip. When viewed from some distance only one car (Coach 1501) appeared objectionable as far as the general appearance of the train was concerned. This particular car was plum-colored as against the bright maroon color of the other cars. Close inspection showed it to have a streaked and mottled appearance. The other cars in the train showed varying degrees of dark streaking with the exception of coaches 1552 and 1515 which appeared in good condition. Coach 1515 appeared to be a "Duco" job.

Later Coach 916 was added to the train and this was comparable to the plum-colored 1501. Coach 1511 on a train passing in the opposite direction was easily picked out as being badly discolored.

From our observations it is apparent that all of the cars if cleaned with ONC Cleaner will eventually discolor badly and the complaint should be considered justified chargeable against the Phila. Laboratory since the possible difficulty with railway cleaners with formulations involving the use of W-318 Rubine Red and W-322 BON Maroon was overlooked.

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W-318 Rubine Red is no longer available and W-322 BON Maroon has been adopted as a replacement having slightly better color retention and less discoloration in baking products. Our background with W-318 in the automotive field has been entirely satisfactory. We have had no practucal experience with W-322 in the automotive field as yet. W-318 appears less sensitive to oxalic acid cleaners than does W-322. While we have not had difficulty with W-318 formulations due to discoloration with cleaning solutions, it may be because products using this pigment have not been used on railway buses or street cars where this type cleaner is used. We are faced with the problem of possible difficulty as we were with W-318, with products using W-322 where oxalic acid cleaners are used. At the present time W-322 appears only in 14-322, 88-35575, 91-23927M, and 94-0322. There is a probability that it may be introduced during production into any formula calling for W-318 since we are no longer receiving supplies of W-318. There are approximately 100 formulas using W-318 in the 93 Line. Action is required of the Phila. Lab. to provide, if possible, some means of eliminating potential complaints due to discoloration from cleaning solutions of any of these formulas. This can be accomplished by not offering these colors to the railway, bus and street car trade.

As to future action to satisfy Lehigh Valley, the Sales Department will determine the proper recommendation to make to keep the paint shop in operation at a minimum risk, i.e., the possible use of RA-130 Clear over 88-35575, and will determine the proper adjustment to be made with the customer.

The Phila. Lab. is required to formulate a color match to 88-33575 using KW-3458 Tonga Red MT-37 which has been found satisfactory for use with ONC Cleaner. This is being actively followed and a formula is now (7-15-47) in the plant under the code of P-88-P-97169. Sufficient pigment having been previously ordered from Chicago and expected momentarily. A higher cost for this product was was pointed out to the Lehigh people.

Reference may be made to Mr. Miller's report under date of July 9, 1947 to Mr. Pratt, covering details not recorded here.

PHILADELPHIA LABORATORY

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