

# LEAD INDUSTRIES ASSOCIATION

480 LEXINGTON AVENUE

NEW YORK 17, N. Y.

CONFIDENTIALSUBJECT TO REVISIONWHITE LEAD SECTION MEETINGWHITE LEAD RESEARCH COMMITTEE

New York, N. Y.

November 18, 1944

A meeting of the White Lead Research Committee of the Lead Industries Association was held at the office of the Association on November 18, 1944.  
Present were:

REPRESENTATIVE

A. C. Goets  
O. P. Shobe  
A. R. Knight  
E. D. Turnbull  
E. Peterson  
K. Vetterwinkel  
E. J. Dunn  
L. A. O'Leary  
M. Van Lee, Chairman  
H. Saunders

COMPANY

Eagle Fisher Company  
Barton Lead Company  
Barton Lead Company  
Barton Lead Company  
National Lead Company  
National Lead Company  
National Lead Company  
W. P. Fuller Company  
Sherwin-Williams Company  
Sherwin-Williams Company

P. E. Wormser, Secretary, Lead Industries Association  
J. Leland Benson, Secretary of Meeting

The meeting was called to order at 10:00 A.M. by Dr. Van Lee, the Chairman.

Dr. Van Lee reviewed the previous work of the committee and suggested that consideration be given to whether or not the work is progressing along the most beneficial lines. He questioned whether the papers in preparation and under consideration should be withheld until lead supplies are more plentiful and released in comparatively rapid sequence or whether they would be more effective if more widely spaced with releases beginning in the near future and building toward an increased demand for white lead when it becomes more plentiful. He asked Mr. Wormser if there was any indication of improvements in the lead supply situation that would justify the basing of plans for a series of releases.



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Mr. Wormser and Mr. Knight both expressed doubt that any forecast could be made at present but that indications might be evident after the first of the year. There will probably be a slow improvement starting very soon but the price will be high.

Dr. Van Lee asked Mr. Knight if an increase in the price of titanium dioxide was likely.

Mr. Knight said that there might be a slight increase but pointed out that should the titanium dioxide price equal the price of lead, lead would still cost twice as much by volume.

Dr. Van Lee said that he believed that the committee should consider the early publication of papers now in preparation and asked the committee members to report on their progress.

1. Single Pigment Exposures, Including the Functions of Respective Pigments.

Mr. Peterson reported that he had given the subject consideration and had done some work. He believed that the subject is too big for a single paper if the formulation of multipigment paints is included.

He presented a rough draft of a tentative paper for discussion stating that it was not conclusive in nature but a presentation of data available. (A copy of Mr. Peterson's paper is attached as Exhibit A).

Dr. Van Lee said that this paper is a step in the right direction and questioned whether it should be left at this point. He also said that it leads directly into Item 6 which concerns chemical composition of white lead, the consideration of which should be the opening gun.

He said that, in his opinion, this paper should include or be quickly followed by another as mixed pigment paints.

Mr. Dunn said that he believed it would be better psychologically to present mixed pigmentations in a second paper.

Mr. Goets stated that he believed that the paper would be valuable in reiterating to paint formulators, especially the younger men, the inherent good paint properties of white lead. He felt, however, that the paper as outlined was not sufficient and that additional data should be sought that would demonstrate that white lead content within a certain range is necessary to impart good durability and other desirable properties to exterior paint. He said that no one at the meeting was prepared to prove that high white lead content paints (eg 40%-60%) performs any better than low white lead content paints (17.6%) in LF21 types of pigmentations.

Mr. Dunn said that regardless of the fact that mixed pigmentations can be made to show good performance it was his observation that when chemical analyses of failed paints were made they were invariably mixed pigment paints.

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Mr. Vettowinkel believes that paint formulators who are not repeatedly made aware of the desirable properties of white lead tend to become more willing to substitute other materials for reasons of economy.

Dr. Van Lee requested an expression from the committee as to whether they believed that the paper as outlined by Mr. Peterson should be completed and published.

Mr. Vettowinkel moved that the project should be completed.

Seconded.

Carried.

2. Physical Properties of Single Paint Films.

Mr. Dunn reported work still in progress with enough data available to provide tensile strength comparisons of various pigments.

Dr. Van Lee reported that the work on mixing and grinding had been delayed because of laboratory personnel changes. He also stated that due to the limited and non overlapping ranges of the instruments used for determining consistency, it had, as yet, been impossible to estimate accurately the total amount of energy consumed in mixing pigments with oil.

He said he would like to have preliminary papers prepared on this subject also.

Mr. Vettowinkel moved that such papers be prepared.

Seconded.

Carried.

3. Chemical Properties of Peacetone Pigments and the Functions of Reaction Products.

The work on this subject is still being held in abeyance until further progress is made on other projects now under active consideration.

4. Primers and Undercoats.

Dr. Van Lee reported extensive work now under way but not yet ready for evaluation.

Mr. Shobe recommended that the committee consider the desirability of the use of a primer coat on repaint work. This was generally approved and Dr. Van Lee requested members to endeavor to supply exposed panels suitable for use in an investigation of special primer versus self primer in repainting work.

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5. Blistering and Adhesion Studies.

Mr. Peterson said that, in his opinion this subject shows little promise of advantage from further study and he moved that it be held in abeyance until some data is presented which would indicate otherwise.

Seconded.

Carried.

6. Chemical Composition and Improvements of White Lead.

Mr. Peterson reported that a paper on this subject has been completed and is ready for publication by National Lead Company.

7. Tint Retention.

No progress was reported on this subject and the Chairman asked for volunteers to set up a series of formulas for tint retention studies. W. P. Fuller reported too busy to have done or to do any work on this project assigned to them.

Mr. Peterson volunteered to submit proposals at the next meeting.

The committee then proceeded to a general discussion of the value of the work which had been undertaken and the attitude of the member companies of the Lead Industries Association.

In response to a query as to such attitudes, Mr. Wormser replied that he had heard no criticism and believed that if the committee wished to inaugurate a program which would require funds, but would produce data useful in the promotion of the use of white lead, that the mining company members would help support it since there will, in the future, again be a need to promote the use of white lead in a competitive market.

It was agreed that it would be profitable if the white lead promotion work now being done by the individual companies were supplemented by work sponsored by the Association.

Mr. Saunders suggested that the committee base their approach to the problem on the experience of the Red Lead Technical Committee and

1. Outline the competition.
2. Explore the weaknesses of their position.
3. Direct their research toward ascertaining how much white lead can or should be used in formulating mixed pigment paints.

Dr. Van Lee suggested that with the three active papers, (1) Functions of Reactive Pigments, (2) Chemical Properties of White Lead and (3) Tint Retention, the committee has a basis upon which to work and a starting point for planning future work.

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Mr. Peterson moved that every member of the committee be required to submit in writing his ideas of what projects would be suitable for the committee to undertake.

Mr. Saunders seconded.

Motion carried.

After Dr. Van Lee expressed the opinion that Eagle Fisher seemed to have the useful data available on primers and undercoats for near future use and since the Sherwin-Williams Co. studies are only one year old he asked that Eagle Fisher prepare a paper.

Mr. Peterson seconded.

Motion carried.

Dr. Van Lee requested that all members who have agreed to prepare papers have them ready by the date of the next meeting not later than February 15.

Mr. Wormser requested Dr. Van Lee to consider the desirability of submitting a request for funds for the use of the committee in its proposed work and to advise him of his opinion.

The business of the committee having been completed the meeting was adjourned at 4:30 P.M.

*J. Leland Benson*  
J. Leland Benson

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CONF

Exhibit "A"

THE EXTERIOR PERFORMANCE CHARACTERISTICS OF  
SINGLE PIGMENTS IN LINSEED OIL

The formulation of paints can be regarded as an art of compounding together of several different ingredients to obtain the desired effects. The effects which result are derived from the properties of the divergent ingredients employed. If all of the properties of the individual components are sufficiently well known, the results obtained from the composition need be neither mysterious nor surprising and can be predicted with reasonable accuracy. The successful formulator must be familiar with the materials employed, and the ease and success with which formulations are prepared is dependent upon the extent of the formulator's knowledge of the characteristics of the ingredients. It is apparent, therefore, that the formulator must continue to seek more data regarding his materials and that the primary consideration in research and development work on new and improved coating composition lies in the more extensive study of the properties and behavior characteristics of each potential raw material.

This philosophy applies particularly well to the field of exterior paints and the pigmentation of these paints. The largest proportion of exterior paints is based upon linseed oil and white pigments. Linseed oil, however, although used almost exclusively because of high demands upon flexibility and adhesion, produces clear films of comparatively poor durability, when not pigmented. Pigmentation is employed to modify the characteristics of the film as well as to provide opacity. By proper pigmentation, the life of a linseed oil film can be increased by as much as ten times. Thus, the pigmentation of such paints becomes one of the major factors in their formulation. If several different pigment components are used, the range of properties is broadened and the number of possibilities available to the formulator thereby increased. The greater the number of components, however, the more necessary it is for the formulator to be intimately acquainted with the characteristics of each single material in order to evaluate the probable cause of an observed effect and to estimate the proper compositional changes required for its modification.

The pigments used in white base exterior oil paints can be grouped into the following classifications:

1. Reactive hiding pigments.
2. Non-reactive, hiding pigments.
3. Non-reactive, non-hiding pigments.

The term "reactive" is applied to those pigments which are sufficiently basic in character to react readily with acidic components of the vehicle. The most commonly used pigments in this class are basic carbonate white lead, basic lead sulfate and zinc oxide. In the second class, the most common pigments used are zinc sulfide and titanium oxide, either in the pure or composite forms. The third class encompasses the so-called "extender" pigments, and fibrous magnesium silicate is representative of this type.

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Exhibit "A"

A number of the properties of these pigments, such as bulking values, hiding powers and consistency effects, have been extensively investigated and reported in detail. However, one of the more important considerations in this application is the effect of these pigments upon the performance characteristics of films exposed to weathering influences. It is the purpose of this paper to report such data on the behavior of these individual pigments.

This data is based -----

(Here follows factual reporting of exposure data,  
with suitable descriptions, charts and photographs,  
but without elaboration or interpretation.)

This data, of course, deals with only one particular phase of the problem, and it is offered as a contribution to the general knowledge. In its use along with other known information, it should be recognized that:

Some effects, such as those of a catalytic nature, are essentially independent of the proportions used.

Some effects may be obscured in a study of this sort, while others may be diluted or masked in certain combinations.

Each ingredient may serve to repress the effect of another component.

Types of pigments, other than those used, may exhibit somewhat modified characteristics.

Further investigation of these factors, where required, would constitute an additional contribution to this basic knowledge. While it is not suggested that the features upon which this information has been presented represent the sole criteria in the formulation of exterior paints, they are important basic principles which can be useful in solving formulation problems and with which all sound formulations and conclusions must be in agreement.