

REPORT OF C. J. VANIER VAIL
Technical Director, Pigments and Chemicals Division

Our efforts this year have been concentrated mainly on promotional work. This promotional work was carried out through field contacts and the distribution of technical literature.

A limited amount of research was planned and initiated to add to the store of knowledge on red lead and to keep abreast of developments in vehicles.

The seventh in the series of Red Lead Technical Letters was published during the month of August. This bulletin contains several suggested complete red lead primer systems specifically designed for application to dams and adjacent equipment, ships navigating in fresh water, water storage tank interiors and industrial equipment exposed to chemical atmospheres.

Approximately ten thousand copies of this Technical Letter were distributed to individuals interested in the manufacture, specification and use of metal protective paints.

Another bulletin, the eighth in the series, on red lead paints for railroads has been approved by the Red Lead Technical Committee and will be printed within the next two or three weeks.

We have continued the practice of circulating monthly lists to red lead manufacturers of individuals requesting literature. This practice was continued during 1952. These lists are arranged according to state and city and include company affiliation and position of each individual requesting literature as well as the type of literature desired. These listings, containing several hundred names, have given an indication of the interest aroused by our promotional literature and have furnished valuable leads for follow up by the section's technical director and the technical sales staffs of our member companies.

Requests for several hundred additional pieces of red lead literature were received from our member companies.

Field visits were continued throughout this year to federal agencies, state highway departments, utility companies and paint companies. Many inquiries received on red lead paints were followed up by personal contacts. Conventions of the American Society for Testing Materials, Federation of Paint and Varnish Production Clubs and the National Association of Corrosion Engineers were attended both to keep abreast of newly reported technical developments and to keep up contacts with persons interested in protective coatings.

During the year the division's technical director served as secretary to the Government Advisory Committee on Chromate Pigments sponsored by the Corps of Engineers, U. S. Army. It is the purpose of this committee to evaluate metal protective paints based on lead chromate and other chromate pigments as well as standard and specification paints based on red lead. At our suggestion several red lead specification formulas and L.F.A. red lead formulas were included in tests sponsored by this committee.

The meetings of the Steel Structures Painting Council were also attended. The objectives of this Council are:

1. To review the art of cleaning and painting steel structures through

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Technical Director, Pigments and Chemicals Division (Cont'd)

literature surveys, conferences and other means, to determine and outline the best methods developed to date.

2. To issue codes or specifications covering practical and economical methods of surface preparation and painting steel structures, based on the present knowledge of the membership of the Council.
3. To issue from time to time recommendations intended to further improve, and to make more effective and more economical the protection of steel structures; such recommendation to be made available to specification and code writing committees.

The Lead Industries Association became a supporting member of the Council at the beginning of 1952. Mr. Ziegfeld was appointed to the Executive Committee and the technical director to the Research Committee of the Council.

A painting manual and several paint specifications are now in process by the Council. Most of the systems recommended by the Council for long term protection are based on red lead primers. We feel that our active participation in the Council will aid us in promoting wider and more intelligent use of red lead paints.

The Red Lead Technical Committee initiated two research projects during the past year. The first is a comprehensive test of red lead base systems for new and rusted galvanized iron and for aluminum coated steel. The second project was set up to determine the relative merits of vinyl metal surface conditioners and anticorrosive paints containing red lead, zinc chromate and various other pigment materials.

Pigmentation of vinyl coatings is still a controversial subject even though it is known that lead compounds are especially well suited for combination with vinyl copolymers because of their inherent heat and stabilizing effects.

Periodic inspections of two cooperative paint projects were made during the year in the company of personnel of the Bureau of Ships, Norfolk Naval Shipyard and the Philadelphia Naval Shipyard.

A red lead base primer developed by the Red Lead Technical Committee was found to be outstanding in the marine atmospheric and tide range project sponsored by the Philadelphia Naval Shipyard. This primer has now been included in a second project for more thorough evaluation.

The project initiated by the Norfolk Naval Shipyard to evaluate primer paints under cold plastic antifouling paints for ship bottom was completed during the year. Inspections at five sites have shown two red lead systems to be generally superior to the other nineteen systems on test. These are the red lead-vinyl system and a red lead-coumarone type paint, both publicized in our Technical Letters.

A service test is now being carried out on one red lead bottom paint system that proved outstanding in the Navy-L.I.A. cooperative tests. Three hundred gallons of this anticorrosive primer have been applied to underwater hull sections of destroyers.

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REPORT OF C. J. VANDER VALK (CONT'D)

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The other anticorrosive paint proved best in the test has since the inception of the test been written into a military specification designated MIL-P-15929.

A considerable amount of our work with the Navy Department during the past several months has been concerned with the encouragement of the use of Navy Red Lead Formula No. 116 as an after-pickling or shop primer for new ship plate. Up to now this formula has been limited to use as a maintenance paint for all parts of ships above the water line. The use of this paint on plates for new ships will result in a significant increase in tonnage of red lead for paint use.

Although the Bureau of Ships is convinced that this red lead primer is superior to the currently used zinc chromate primer for new construction the question of the possible toxic effects of the fumes generated during the welding of the painted plates is holding up its adoption. Navy contract shipyards have asked the Bureau of Ships for assurance that the present ventilation factors set up for welding operations are sufficiently high to avoid dangerous concentrations of lead. Although no difficulty was experienced during extensive operations of this type in the Maritime Commission during the Second World War, the Navy wants quantitative data on the concentrations of lead generated when an arc is struck on ship plate coated with Formula No. 116.

After discussions with the paint, welding and hull construction sections of the Bureau of Ships a project was initiated to determine safe ventilating factors for the welding of lead paint coated ship plate. It has been proposed that this work be carried out within the next few months at the Harvard University School of Public Health and the Boston Navy Yard under the supervision of Professor Phillip Drinker, Consultant to the Navy and Maritime Commission on industrial hygiene problems. If carried out we feel that this will clear away the last major obstacle to the use of red lead paints for the initial coating on new ships.

Exhibit

This Division exhibited at the annual Paint Industries Show in Chicago during the week of November 17.

The booth featured illustrations on the practical application of red lead paints and test panels containing specification primers and selected systems developed by the Red Lead Technical Committee.

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COMPREHENSIVE L.I.A. ATMOSPHERIC PROGRAM

Inspections and data tabulations were continued on some 1500 test specimens originally exposed in September, 1948 at five widely scattered geographic locations. This program was established to show the comparative performance of ninety-five test paints and twenty-five specification and control paints formulated with red lead, zinc chromate and several other pigments advocated for metal protective paints.

This project has already revealed valuable information for the guidance of the Red Lead Technical Committee in planning promotional programs. Considerable valuable information about competitive products has been obtained.

ARTICLES FOR "LEAD MAGAZINE"

While not financed by this division, the Lead Industries Association publication "Lead" has been supplied with a series of articles on outstanding practical applications of red lead. This publication is circulated to over 30,000 architects, public officials, water works engineers, building contractors and others who specify and buy metal protective paints.

U. S. NAVY SPECIFICATIONS

One of the main objectives of this Division throughout its existence has been the recapture of this metal protective paint market which was lost to zinc chromate at the onset of World War II. Immediately after Pearl Harbor the Navy officially adopted the zinc chromate type primer on all naval craft construction, excluding red lead.

In the Annual Report for 1949 we reported that the Navy had adopted Bureau of Ships Formula No. 116 for maintenance of exterior weather surfaces of ships. This primer is a red lead base multiple pigment primer containing 3.7 lb. of red lead per gallon. The naval paint factories went into immediate large scale production of this primer and many thousands of gallons have been produced during the past year. Wide scale application of this maintenance primer was clearly evident in several naval shipyards visited during the past year. In a few minutes we hope to show you a new Official Navy Training film in which this new red lead primer is included as part of the standard topside maintenance system.

Recent reports from the Bureau of Ships have indicated that Formula No. 116 will soon be changed into a full Military Specification.

A highly gratifying development during the past year has been the adoption by the Bureau of Ships of a red lead-vinyl anticorrosive paint. This was officially adopted by the Navy on May 1, 1950 under the title "Bureau of Ships Formula 119, Primer, Vinyl-Red Lead Type". This was later written into a Military Specification designated as MIL-P-15929 (Ships). This formula is particularly well adapted for use with a metal-conditioning wash primer and a vinyl antifouling coating.

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for the protection of ship bottoms. Although an alternate zinc chromate base vinyl formula was adopted simultaneously, there is an excellent possibility that a considerable gallonege of the red lead-vinyl type will eventually be used in many naval shipyards.

The Red Lead Technical Committee has planned a new research program with the aim of proving the superiority of red lead over other types of pigmentations in vinyl systems.

COOPERATIVE RESEARCH PROGRAMS WITH THE NAVY

Periodic inspections of two cooperative paint projects were made during the year in the company of personnel of the Bureau of Ships, Norfolk Naval Shipyard and the Philadelphia Naval Shipyard.

The project sponsored by the Philadelphia Navy Yard contains nine Lead Industries Association red lead primers with panels exposed in marine atmospheric and tide level exposures at Sayville, Long Island and Miami, Florida. After eighteen months exposure several red lead systems have been rated superior to the comparative zinc chromate systems.

The project initiated by the Norfolk Naval Shipyard to evaluate primer paints under cold plastic antifouling paints for ship bottom has now been underway for twenty-four months. Recent inspections at five sites have shown two red lead systems to be generally superior to the other nineteen systems on test. These are the red lead-vinyl system and a red lead-coumarone type paint, both publicized in one of our Technical Letters and referred to in previous sections of this report.

A member of the staff at the Norfolk Naval Shipyard recently reported the results of this project to the Paint Division of the American Chemical Society at their National Meeting in Boston. This paper was highly favorable to red lead paints and will be published during 1951 in the A. C. S. official publication "Industrial and Engineering Chemistry".

A member of the Bureau of Ships staff recently informed us that he is planning full scale service tests on one red lead bottom paint system that proved outstanding in the bottom paint tests. A destroyer or vessel of comparable size is usually used in a service test of this kind.