Plastics for Traffic Markings

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Synopsis*

The objective of this study was to find the causes of failure of the concrete paints in use at present and to find paints and painting methods to overcome these causes.

Both laboratory and field tests showed that these paints fail principally by scaling due to loss of adhesion between the paint film and the concrete in the presence of water. The water, coming from the moist soil beneath the pavement, travels upward through the concrete and evaporates from its surface. The water traveling upward carries soluble salts with it; these salts are deposited upon evaporation of the water. The paint film offers resistance to the passage of the water vapor and to the growth of the salt crystals, and the resulting forces may break the bond between paint and concrete. The surface of the concrete itself may be disintegrated by the growth of these crystals. The thickness of the paint film, which governs its resistance to the passage of water vapor, has a marked influence on the rate of scaling of some paints.

Laboratory and field tests, designed to compare the durabilities of standard and proposed concrete-highway paints, showed that the thermosetting and thermoplastic synthetic resin paints tested had far better water, alkali, and abrasion resistance than standard paints. It was concluded that the baking-type paints and the strongly-polar thermoplastic resin paints tested were suitable, satisfactory, and superior for concrete highways.

* Reprints of the complete paper, which appeared in the Highway Research Board Proceedings, 1944, may be secured from the Joint Highway Research Project, Purdue University. Since it has been printed already, we are omitting it here in the interest of economy.