Superprimer Compounds Make Paints Safer For The Environment

University of Cincinnati

Chromates have excellent anticorrosion properties — which is why more than 600,000 metric tons of chromate are incorporated into paints every year. Despite its effectiveness in protecting metal from corrosion, chromate in its hexavalent oxidation state is toxic and carcinogenic. Overexposure to chromate results in a host of health problems, such as ulcers, respiratory ailments, allergic reactions and cancer. Paints also release volatile organic compounds (VOCs) into the air, which are dangerous to breathe.

A new anticorrosion primer system developed at the University of Cincinnati in Ohio, totally eliminates the need for chromates in paints. “Superprimers” were developed from 2001 to 2006 by professor of materials science William J. van Ooij, Ph.D. More than $2 million in funding was received from the Environmental Protection Agency, Department of Defense, and the Strategic Environmental Research and Development Program. Superprimers are one-step, verylow-VOC primers that can replace the chromate-based anti-corrosion primers typically used in the metal-finishing metal-pretreatment industries. Mixtures of silanes (silicon analogues) and waterborne

Resins can be applied directly to metals as self-priming primers. A plasma-treated pigment package in the primer slowly releases a corrosion inhibitor that mimics the anticorrosion properties of chromates.

> *Because superprimers have very low VOC content and no chromate, they are much safer for human health and the environment.*

Ecosil Technologies was launched in 2003 to commercialize superprimer technology. Ecosil works with many companies around the world and currently has joint development agreements with several billion-dollar companies in the silane and paint industries.

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