Sustainable water-based corrosion protection

Effect: resources | Megatrend: sustainability

NO CHANCE FOR CORROSION

Corrosion gnaws its way stealthy through bridges, machines and buildings, causing enormous damage. Established methods of surface treatment are seen ever more critical, mainly for reasons of health and environmental protection. Corrosion protection system containing organic solvents are discussed as environmentally harmful and should be replaced. Evonik's specialists rely here on environmentally friendly water-borne silane systems, used as binder or component in corrosion protection formulations.

INNOVATIVE WATER-BORNE BINDERS

Paints with an underlying zinc dust primer are the means of choice when long-term corrosion protection is called for. The water-borne Dynasylan® SIVO 140 is powerful, thermally stable, can be easily diluted with water and formulated with fillers and anticorrosive pigments. Corrosion inhibition primers based on Dynasylan® SIVO 160 are particularly designed for protecting materials like aluminum, magnesium, and zinc galvanized iron or steel. Very thin layers in the range of 100 – 200 nm can prevent the corrosion of aluminum.

THE ECONOMIC ROLE OF CORROSION PROTECTION

The global annual cost of corrosion is estimated to be $ 2.5 trillion per year, which is equivalent to about 3 % of the Global Gross Domestic Product, causing a major interest in innovative corrosion protection systems and the necessity to reduce and control metal corrosion. According to DECHEMA appropriate protective measures could save up to 30 % of these costs every year. In many countries regulations of VOC in coatings have become more stringent. Sustainable water-borne silane systems are a perfectly tailored solution to this challenge.

GOOD FOR THE ENVIRONMENT

Chromate in various guises has been the preferred pre-treatment process for different metal substrates. Nonetheless, treatment with chromium (VI) is already prohibited in some application areas because chromate (CrVI) has been identified as a human carcinogen. Promising candidates for alternative, environmentally compatible methods are water-borne silane systems.

Resources↓ Longevity ↑ Maintenance↓