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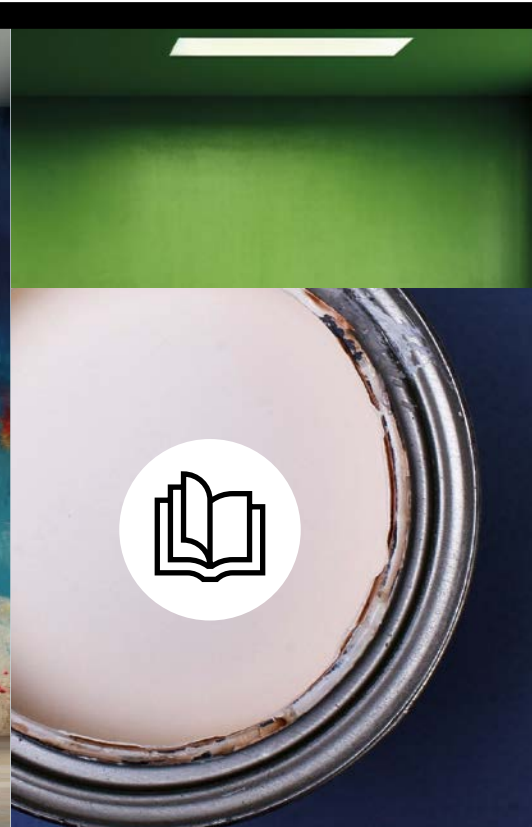
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COATINGS

tech report



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FUNDAMENTALS

Basic principles of architectural coatings 06

Introduction of polymer dispersions and discussion of the composites of water-based coatings formulation.

By Roland Baumstark and Roelof Balk

 **BOOK EXCERPT: Water-based Acrylic Dispersions**




DEEP INSIGHT | EMULSION BINDERS

VAE copolymer emulsions in latex paints 30

Characteristics of formulations for interior applications.

*By Artur Palasz, Ph.D. | **Spektrochem***

PLUS

-  **VIDEO: Novel fluoro-free and silicone-free blocking resistance additives for water-borne coatings**, by Dr Susan Dong, Stepan
-  **VIDEO: Durable matte: Film-forming binder technology to drive performance in low sheen paints**, by Dr. Partha Majumdar, Dow Chemical
-  **VIDEO: Novel reactive surfactants for latex emulsion polymerization**, by Julia Zaug, Stepan



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DEEP INSIGHT | BIO-BASED BINDERS

Greener decorative paints 36

Design the phases carefully for better results than fossil-fuel based binders.

By Willem Jan Soer, Maud Kastelijn and Tijs Nabuurs |
DSM Resins and Functional Materials

PLUS

- ▶ VIDEO: Recycling options for leftover consumer paints – potential and challenges, by Dr Jitte Flapper, Akzo Nobel



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DEEP INSIGHT | POWDER BINDERS

Look – no biocides 42

Dispersible polymer powder binders for wall paints.

By Dr Stefan Baueregger and Dr Lada Bemert |
Wacker Chemie AG

DEEP INSIGHT | SILICONE RESINS

Film boosting benefits 48

Hydrophobic silicone resin for high-performance water-borne coatings.

By Ping Jiang, Paula Cousino, Ning Lu, Antonio Chaves |
Momentive Performance Materials

PLUS

- ▶ VIDEO: Highly branched vinyl ester-based emulsions, by Ludivine Augry, Hexion Research Belgium
- ▶ VIDEO: Siliconized acrylic dispersion binder extending the aesthetics & durability of façade coatings, by Dr Jouko Vyörykkä, Dow
- ▶ VIDEO: New binder for water-borne consolidating primers for masonry, by Christophe Baude, Synthomer
- ▶ VIDEO: Protecting your walls – novel solutions for interior & exterior wall paints, by Oliver Peters, Evonik



DEEP INSIGHT | ADDITIVES

Keeping up appearances **56**

A green, zero-VOC, clay-based additive reduces the growth of algae, thereby thwarting coating degradation.

By Julija Karasa | **University of Latvia**; Solvita Kostjukova, Juris Kostjukovs, and Davids Stebelis | **ALINA**; Ieva Putna-Nimane | **Latvian Institute of Aquatic Ecology**

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- ▶ VIDEO: Biocide-free architectural coatings: How to use the right additives to formulate silicate-based systems with dispersion paint properties, by Dr. Sebastian Prock and Jörg Rüger, Clariant
- ▶ VIDEO: Undesired green – Microbiological Growth on Facades, by Dr Christoph Walter, German Paint and Printing Ink Association (VdL)

PRODUCT OVERVIEW | BIOCIDES

Stay clean **62**

Different acting film and in-can preservative additives for different applications summarised in tabular view.



56



62



64

DEEP INSIGHT | DIGITAL ASSISTANT

Counting Craters **64**

A digital assistant for quantifying coating defects.

By Julian Rixrath and Dr Philipp Isken | **Evonik**

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70

MARKET INSIGHT | EUROPE

Tough times **70**

An overview of the European paints and coatings market.
By Douglas Bohn | Orr and Boss Consulting

MARKET INSIGHT | GLOBAL

A mixed picture for architectural coatings **73**

Solid growth in Asia-Pacific and Middle East & Africa expected, while Europe will show slowest growth.
By José Bottino | IRL

FACTS IN FIVE

German paint market **29**




Italian coatings market **55**

The U.S. paint and coatings market **61**



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73

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BASIC PRINCIPLES OF ARCHITECTURAL COATINGS

Water-based polyacrylates, as emulsion binders, dispersing resins or thickening polymers, are nowadays impossible to do without as raw materials in the paint and coatings industry. In this article by Roland Baumstark and Roelof Balk you will learn the basics of polymer and emulsion dispersions and how to formulate water-borne architectural coatings.



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1 Introduction and basic principles

1.1 Architectural coatings and binders

Architectural coatings have a dual function: on the one hand, they make a significant contribution to the aesthetics of the building or the structural components, for instance by colouring or accentuating their structure. On the other one they protect the building material against external influences, such as moisture, sunlight, or mechanical or chemical damage.

The majority of water-based architectural coatings are complex mixtures of a wide variety of chemical components, as shown by the following compilation:

Main components

- Water
- Binders
- Pigments
- Fillers

Additives/auxiliaries

- Dispersants and wetting agents
- Thickeners/rheology modifiers
- Defoamers
- Preservatives/biocides
- Solvents/film-forming auxiliaries

It is not uncommon for aqueous architectural coatings to contain between 10 and 20 different ingredients.

The function of the binder is to give the coating the necessary cohesion, durability, weathering stability, good mechanical properties such as flexibility or hardness, and to give the paint its advantageous processing properties. The binder embeds the colouring pigments and fillers in a stable matrix and joins them to the substrate. This distinguishes the finished coating from, say, classroom chalk, which is based on pressed chalk, acts without a binder and is therefore easily washed off.

Besides the pure inorganic material water-glass, which has already been in use for a long time in silicate systems, today the binders used for water-based architectural coatings are predominantly polymer dispersions.