

Information Sheet

VeoVa™ 10 Vinyl Ester

Longer Lasting Wood Protection



Wood Protection

Exterior wood coatings

Wood is a very popular building material not only for applications such as window frames and cladding but also for the creation of outdoor living spaces such as wooden patios, decks, fences and garden furniture. Without some type of protective surface coating, most wood will deteriorate very rapidly during outdoor exposure. This information sheet is an update on our "Solutions for Longer Lasting Wood Protection" brochure adding 5 years outdoor durability data.

Key Requirements

Key requirements for exterior wood coatings

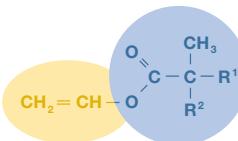
- Resistance to weathering and UV
- Protection against ingress of liquid water
- Good balance between hardness and flexibility
- Adhesion to wood

VeoVa Vinyl Ester

VeoVa vinyl ester quick facts

VeoVa 10 vinyl ester is a monomer with a unique hydrophobic bulky structure and is used in the production of a broad range of high-quality emulsion polymers. Key characteristics of VeoVa 10 vinyl ester are:

- Easily copolymerizable with vinyl acetate, ethylene and acrylates
- Hydrophobic
- Low surface tension
- UV Resistant
- Hydrolytically stable



VeoVa Vinyl Ester Based Wood Coatings

VeoCryl Core/Shell technology

VeoVa monomers readily copolymerize in emulsion with acrylate and methacrylate monomers to yield latices called "VeoCryls", which are particularly suitable for high-performance coatings. For this exterior wood coating evaluation we used core/shell technology to obtain a latex with good blocking resistance and a very good balance between hardness and flexibility.

Outdoor Durability Testing

The following coatings were tested on wooden panels in outdoor exposure:

| Label | System | SB/WB | Formulation |
|-----------------|--|-------|------------------------|
| 30% VeoVa 10 | Acrylic with 30% VeoVa | WB | Formulated emulsion |
| 30% 2EHA | Acrylic with 30% 2-Ethylhexyl acrylate | WB | Formulated emulsion |
| Acrylic BM1 | All Acrylic Benchmark 1 | WB | Formulated emulsion |
| Acrylic BM2 | All Acrylic Benchmark 2 | WB | Formulated emulsion |
| WB Acrylic comm | All Acrylic | WB | Commercial formulation |
| SB Alkyd comm | Solvent borne Alkyd | SB | Commercial formulation |

The wood panels were selected according to the European standard EN 927-3 and were exposed to European natural weather conditions for 5 years (45° facing South, Belgium).

Outdoor Durability Test Results

Gloss retention

Fig 1 shows the gloss retention of the six different systems over five years outdoor exposure. Beyond three years the gloss level of all coatings significantly deteriorated yet the coating based on 30% VeoVa 10 performs as well as the All Acrylic benchmark (BM2).

Visual rating of the surface

Although the measurable durability characteristics (color, gloss, etc.) have significantly changed after the initial three years, the panel coated with 30% VeoVa 10 still looks good, and the coating protects the wood and is still maintainable. Fig 2 shows the visual rating of the panels with the various coatings and Fig 3 the center section of each of the panels after 5 years. (Source: "Outdoor weathering performance parameters of exterior wood coating systems on tropical hardwood substrates", authors Imke De Windt, Jan Van den Bulcke, Inge Wijtjens, Hugo Coppens, Joris Van Acker.)

Fig 1: Gloss retention after 1, 2, 3 and 5 years

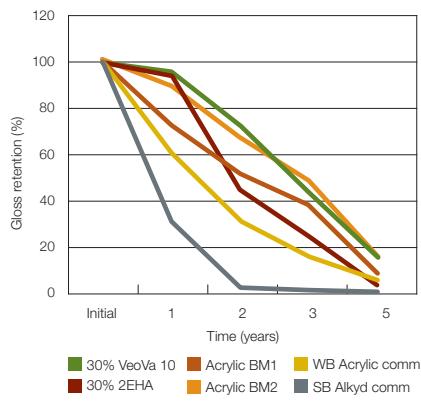


Fig 2: Visual rating after 3 and 5 years

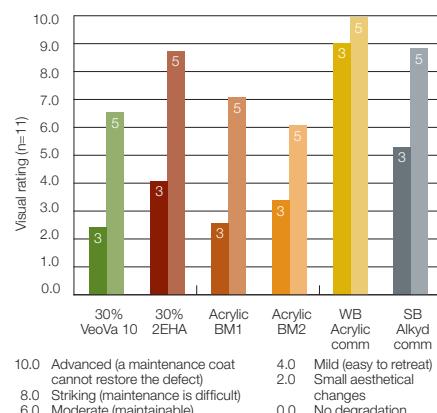
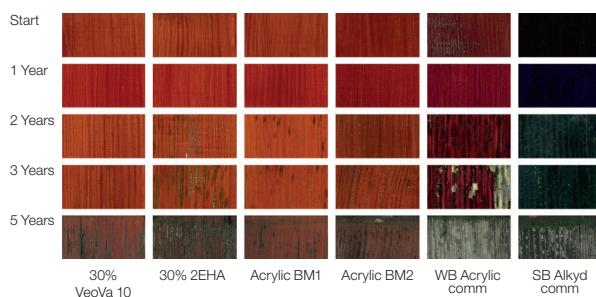


Fig 3: Panel photos (middle section) from 1 – 5 years exposure



Summary

Wood coating based on VeoVa vinyl ester provides superior outdoor durability

- A wood coating based on a VeoVa vinyl ester, self-crosslinkable core/shell polymer shows significantly improved exterior durability
- Major performance characteristics of this wood coating are: increased water resistance, UV resistance and adhesion to wood resulting in longer durability
- The un-optimized wood coating formulation with 30% VeoVa 10 monomer performed at least as good as one of the Acrylic benchmarks and better than the commercial Acrylic and Alkyd formulations tested
- Coatings based on these polymers can be formulated at very low VOC levels



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