MAKE THE MOVE
TO VAE DISPERSIONS

The Technology of Choice for Tomorrow’s Coatings
MAKE THE MOVE TO GROWTH IN YOUR MARKET

WACKER is one of the world’s leading suppliers of high-quality binders and polymer additives. WACKER scientists have been working with polymeric binders since the 1950s, and with vinyl acetate-ethylene (VAE) copolymer dispersions since the mid-1960s. Now, WACKER is the market and technology leader in VAE copolymer dispersions with production sites in Europe, the USA and Asia.
Whether for interior or exterior paints – the future belongs to VAE copolymer dispersion technology. WACKER offers you a product range that includes binders stabilized without the use of APE-based surfactants and with low residual monomer (< 500 ppm), but still offers full performance and, in many cases, cost advantages.

Your Innovative Boost
We complement our production and market experience with our tradition as a hands-on innovation partner to our customers throughout the world. That makes WACKER one of the most research-intensive chemical companies in the world, maintaining its own research department to secure an innovative lead for WACKER and its customers.

Your Market Lead
Complementing our research, our technical centers provide support for customers worldwide. The technical centers are locally based, globally networked, cutting-edge laboratories, which will assist you in your specific applications, modify products to your specifications, test different systems or analyze new formulations.

Your Competitive Advantage
The in-depth product know-how that we have gained, together with our long experience in manufacturing and marketing, has resulted in a portfolio that is as mature as it is innovative. Most recent developments are oriented to tomorrow’s demands. Innovative VINNAPAS® copolymer dispersions offer environmental advantages while offering optimum cost/benefit. And, of course, they perform the most important function: optimizing the properties of your products to give them a competitive edge.

Your Partners
Whether solvent-free or low-emission paints, synthetic resin bound plasters, roof coating compounds or flame retardant systems — there are many applications where the future sets us new challenges. We want to overcome these challenges together with you. Just contact us!
FOR COATINGS AND PAINTS THAT MEET TOMORROW’S DEMANDS TODAY

The paints of the future have low environmental impact but high efficiency and will need to comply with more stringent requirements, labels and legislation. These paints are already feasible thanks to VINNAPAS® VAE copolymer dispersions.

Our VINNAPAS® vinyl acetate-ethylene copolymer dispersions are high-quality polymers that provide coatings with a broad range of advantages:

**Scrub Resistance**
VINNAPAS® copolymer dispersions have a high pigment binding capacity, leading to paints with high cohesion and therefore high scrub resistance performance.

**Low Environmental Impact**
Most VINNAPAS® copolymer VAE dispersions are ideally suited for interior as well as exterior paints. Thanks to their composition, they are able to meet the most demanding European labels and legislation now as well as future obligations due to their low environmental impact. They have been developed without the use of APEO and contain no formaldehyde donors in addition to having low residual monomer content to formulate low odor paints.

**Dirt-Pick-Up Resistance**
Despite the usually low Tg and MFFT, formulators will be able to achieve high dirt-pick-up resistance coatings with long lasting performance. For exterior applications, the grades featuring high water resistance and low superficial thermoplasticity combined with high abrasion resistance will lead to outstanding exterior weathering behavior.

**Good Compatibility with Silicone Resins**
VINNAPAS® copolymer dispersions are also highly compatible with SILRES® BS and are therefore ideal for manufacturing silicone resin emulsion paints for indoor and outdoor use.

**Flame Retardancy**
Our VINNAPAS® copolymer dispersions based on vinyl acetate-ethylene-vinyl chloride are efficient on various substrates: structural steelwork, cable and wood. They are characterized by very good and stable foam formation. Outstanding intumescent performance can be reached in solvent-free formulations.

As application binders for interior decorative paints, VINNAPAS® copolymer dispersions combine excellent performance properties with low environmental impact.
VINNAPAS® copolymer dispersions have an extremely wide range of applications while offering excellent cost/benefit. Flat and glossy indoor and outdoor paints can be formulated without solvents or plasticizers just as easily as dispersion silicate paints, silicone resin emulsion paints or synthetic resin bound plasters.

**Interior Paints**
Some VINNAPAS® grades are very low in residual VAM (< 100 ppm) and can be formulated to low VOC paints (< 5 g/l) and over a broad range of PVCs.

This makes VINNAPAS® ideal for interior paints:
- Ideally combines low environmental impact with effective performance
- High scrub resistance
- Good formulation ability
- Without the use of APEO
- Low residual monomer content, low VOC capable and therefore low odor
- Can be formulated without solvent or plasticizer

**Exterior Paints**
In exterior architectural paints VINNAPAS® dispersions combine various benefits:
- Very versatile
- Suitable for interior & exterior applications, for paints or plasters
- Good durability

**Water-Based Intumescent Coatings**
Specialty VINNAPAS® dispersions are particularly suitable for use as intumescent coatings:
- Fire protection for structural steelwork, cable, wood
- Good foam formation and integrity
- Up to two hours’ protection
- Can be formulated without solvent or plasticizer
# Dispersion Properties for the Paints and Coatings Industry

## Product Overview

### Dispersion Properties

<table>
<thead>
<tr>
<th>Grade</th>
<th>Polymer Base</th>
<th>Solids Content (ISO 3251) (Residue after Drying) [%]</th>
<th>Viscosity Brookfield RVT at 23°C, 20 rpm (ISO 2555) [mPa.s]</th>
<th>pH (ISO 976)</th>
<th>Minimum Film-Forming Temperature (Approx.) (ISO 2115) [°C]</th>
<th>Glass Transition Temperature Tg (DSC) (Approx.) [°C]</th>
<th>Predominant Particle Size (Approx.) [μm]</th>
<th>Protective Colloid/Emulsifier System</th>
<th>APEO-free</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP 3355</td>
<td>VAE</td>
<td>55 ± 1</td>
<td>1,750 ± 750</td>
<td>4 – 6</td>
<td>2</td>
<td>10</td>
<td>0.3</td>
<td>PVOH + ST</td>
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<tr>
<td>EP 3360</td>
<td>VAE</td>
<td>60 ± 1</td>
<td>4,000 ± 1,000</td>
<td>4 – 6</td>
<td>2</td>
<td>10</td>
<td>0.3</td>
<td>PVOH + ST</td>
<td>yes</td>
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<tr>
<td>EF 3777</td>
<td>VAE</td>
<td>56 ± 1</td>
<td>1,000 ± 850</td>
<td>3.5 – 4.5</td>
<td>1</td>
<td>10</td>
<td>0.2</td>
<td>ST</td>
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<tr>
<td>EZ 3010</td>
<td>VAE</td>
<td>55 ± 1</td>
<td>4,300 ± 1,600</td>
<td>4.5 – 5.5</td>
<td>0</td>
<td>7</td>
<td>0.4</td>
<td>CD + ST</td>
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<tr>
<td>EAF 375</td>
<td>VAc-E-A</td>
<td>51 ± 2</td>
<td>2,800 ± 800</td>
<td>6 – 8</td>
<td>2</td>
<td>7</td>
<td>0.4</td>
<td>CD + ST</td>
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<tr>
<td>EAF 380</td>
<td>VAc-E-A</td>
<td>51 ± 1</td>
<td>1,100 ± 500</td>
<td>7 – 9</td>
<td>8</td>
<td>12</td>
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<td>EZ 3523</td>
<td>VAc-E-VV</td>
<td>50 ± 1</td>
<td>3,000 ± 500</td>
<td>4.5 – 5.5</td>
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<td>CD + ST</td>
<td>no</td>
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<tr>
<td>CEZ 18</td>
<td>VAc-E-VC</td>
<td>50 ± 1</td>
<td>12,000 ± 3,000</td>
<td>4 – 5</td>
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<td>7</td>
<td>0.7</td>
<td>CD</td>
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<td>CEF 10</td>
<td>VAc-E-VC</td>
<td>50 ± 1</td>
<td>2,700 ± 800</td>
<td>5 – 7.5</td>
<td>5</td>
<td>16</td>
<td>0.1</td>
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<td>CEF 50</td>
<td>VC-E-A</td>
<td>51 ± 1</td>
<td>1,700 ± 800</td>
<td>7.5 – 8.5</td>
<td>17</td>
<td>20</td>
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<td>ST</td>
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<td>CEF 52</td>
<td>VC-E-VL</td>
<td>60 ± 1</td>
<td>5,500 ± 2,500</td>
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<td>7</td>
<td>14</td>
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<tr>
<td>EP 16</td>
<td>VAE</td>
<td>50 ± 1</td>
<td>9,000 ± 3,000</td>
<td>4 – 5</td>
<td>0</td>
<td>1</td>
<td>0.5 – 2</td>
<td>PVOH + ST</td>
<td>no</td>
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</table>

### VINNAPAS® Vinyl Acetate-Ethylene Copolymer Dispersions

<table>
<thead>
<tr>
<th>Grade</th>
<th>Polymer Base</th>
<th>Solids Content (ISO 3251) (Residue after Drying) [%]</th>
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<th>Predominant Particle Size (Approx.) [μm]</th>
<th>Protective Colloid/Emulsifier System</th>
<th>APEO-free</th>
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<tbody>
<tr>
<td>SAF 34</td>
<td>S-A</td>
<td>50 ± 1</td>
<td>9,000 ± 3,000</td>
<td>7.5 – 8.5</td>
<td>12</td>
<td>20</td>
<td>0.1</td>
<td>ST</td>
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<td>SAF 72</td>
<td>S-A</td>
<td>50 ± 1</td>
<td>2,000 ± 4,000</td>
<td>7.5 – 8.3</td>
<td>23</td>
<td>18</td>
<td>0.1</td>
<td>ST</td>
<td>yes</td>
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<tr>
<td>LL 6008</td>
<td>S-A</td>
<td>50 ± 1</td>
<td>1,850 ± 1,150</td>
<td>7 – 8</td>
<td>0</td>
<td>0</td>
<td>0.1</td>
<td>ST</td>
<td>yes</td>
</tr>
</tbody>
</table>

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1. These figures are only intended as a guide and should not be used in preparing specifications.
2. VAc = vinyl acetate
   A = acrylate
   E = ethylene
   S = styrene
   VC = vinyl chloride
   VL = vinyl laurate
   VV = vinyl versatate or vinyl ester of versatic acid
3. PVOH = polyvinyl alcohol
   CD = cellulosic derivative
   ST = surfactant
4. APEO-free = produced without the use of APE surfactants
5. Capable of being formulated without solvents or plasticizers
## Main fields of application

<table>
<thead>
<tr>
<th>Interior paints</th>
<th>Solvent-free interior paints[^5]</th>
<th>Low VOC capable paints</th>
<th>Gloss paints</th>
<th>Exterior paints</th>
<th>Crack-bridging paints</th>
<th>Silicate dispersion paints</th>
<th>Silicone resin paints</th>
<th>Synthetic resin bound plasters/renders</th>
<th>Roof coating compounds</th>
<th>Flame-retardant systems</th>
<th>Oil resistant paints</th>
<th>Primer</th>
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</tbody>
</table>

[^5]: For detailed information, please refer to the specific product specifications provided by the manufacturer.
YOUR GLOBAL PARTNER FOR LOCAL SOLUTIONS

WACKER offers you a local presence worldwide. You have at your disposal, across five continents, the knowledge of local experts, who are in turn supported by a global network. You’ll gain advantages such as our unique expertise acquired in a broad spectrum of applications and markets during over 70 years of experience.

Reliable Deliveries and Customer Proximity
We have our own production sites in Europe, the USA and Asia, which reduce transit times and ensure continuity of supply while maintaining consistently high quality.

Standard-Specific Tests
Specialists from our technical centers support you in optimizing existing formulations and developing new products.

Your Partner for Innovations
WACKER is active on standardization committees worldwide, collaborating closely with universities and regularly partnering with research institutes to develop projects. That makes us especially qualified to be a partner for innovations – which we will gladly initiate and see through to completion with you. Just contact us!
WACKER is one of the world’s leading and most research-intensive chemical companies. In 2010, its sales totaled €4.75 billion. Products range from silicones, binders and polymeric additives for diverse industrial sectors to bioengineered pharmaceutical actives and hyperpure silicon for semiconductor and solar applications. As a technology leader focusing on sustainability, WACKER promotes products and ideas that offer high value-added potential to ensure that current and future generations enjoy a better quality of life based on energy efficiency and protection of the climate and environment. Spanning the globe via five business divisions, 26 production sites and over 100 subsidiaries and sales offices, we have established a presence in all key economic regions and growth markets. With a workforce some 16,300 strong, WACKER sees itself as a reliable innovation partner that develops trailblazing solutions for, and in collaboration with, its customers. WACKER also helps them boost their own success. Our technical centers employ local specialists, who assist customers worldwide in the
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All figures are for 2010.
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