FORMULATING THE FUTURE – FOR ARCHITECTURAL COATINGS
The way we build defines the way we live – as individuals, families and societies – today as well as tomorrow.

Let’s work together to make the most of that responsibility – for present and future generations.
WACKER – WE’RE HERE FOR YOU

WACKER is a global chemical company with over 100 years of history and a leading portfolio of solutions for the construction, coatings and paint industries. From our beginnings in Burghausen, Germany, we have been continuously developing for decades to become an active partner across the Asia Pacific region. We maintain a strong production footprint in the region with a plant in Nanjing, China which opened in 2009 and a plant in Ulsan, South Korea that opened in 2008. Beyond production, we have technical centers, who work closely on regional customer specific requirements, placed in Shanghai, Mumbai, Singapore and Seoul.

Count on Us!

We Give Our Best
Why do something halfheartedly if you can do it right? To us, quality is not about choosing between an expensive or economic solution. VINNAPAS® polymer binders significantly improve the cost-performance ratio of construction materials.

We Act Locally
Topography, climate and culture make architecture local by nature. That is why we are local, too. With sales offices, production sites, technical centers and native experts around the globe, we work globally with customers and authorities to develop local solutions.

We Value Sustainability
In construction, resources are needed for building and maintenance work. Our R&D specialists and application chemists focus on finding answers that conserve resources throughout the entire lifespan of a building.

We Improve Standards
Quality of life should not be a privilege. We strive to develop and enable solutions that are in balance with human, environmental and economic demands.

We Keep Inventing
WACKER is one of the most research-intensive companies in its field. We invite you to challenge us with your questions and ideas.

VINNAPAS® and PRIMIS® are registered trademarks of Wacker Chemie AG.
Polymer binders have revolutionized the construction and paint industry more than once. WACKER has been a key player in this development.

1920s
WACKER begins researching polymer binders.

1938
Poly (vinyl acetate) dispersion production begins on an industrial scale.

1949
VINNAPAS® makes dispersion-based paints possible.

1957
WACKER is the first to produce a free-flowing dispersible polymer powder by spray drying.

1960
WACKER develops dispersions based on vinyl acetate-ethylene (VAE).

1964
WACKER develops the first terpolymer dispersion with vinyl chloride.

1985
The first dispersible powders based on VAE are manufactured.

2008
WACKER takes control of its APP joint venture by acquiring the share held by Air Products and Chemicals – strengthening its global position and market leadership in all key markets.

2015
WACKER introduces its high performance dispersion product line PRIMIS®.

2017
WACKER showcases its expansion of the PRIMIS® product line of easy-to-clean/stain-resistant wall and flooring solutions at the European Coatings Show.
Vinyl Acetate-Ethylene (VAE) – Serving the Megatrends of Today and Tomorrow
VINNAPAS® dispersions are co- and terpolymers based on vinyl acetate, ethylene and other monomers. Vinyl acetate-ethylene (VAE), in particular, combines technical performance with environmental benefits at an attractive cost-in-use ratio.

VAE dispersions are produced by the emulsion polymerization of the hard, polar monomer vinyl acetate and the soft, hydrophobic monomer ethylene. Ethylene functions as an optimal flexibilizer for vinyl acetate, which incorporating permanent flexibility into VAE polymers. Consequently, the use of plasticizers can be minimized when formulating with VAEs. In addition, all grades are stabilized without the use of APEO-based surfactants, many of them also show low residual monomer content (<500 ppm).

Polymer binders enhance two critical characteristics of all mortars and coatings: adhesion and flexibility. They ensure the quality of buildings and prolong their life expectancy while reducing material consumption. At the same time, they increase creative freedom by making it possible to combine a wide variety of construction materials.

Compliance with Strict Labels
With our cutting-edge VINNAPAS® VAE binders, the construction and paint industries are equipped to meet stringent governmental regulations, as well as the requirements of internationally recognized ecolabels and certifications, such as Blue Angel, Green Seal GS-11, TÜV Süd and EMICODE EC1 plus.
In our decades of working with polymer binders, we have learned a lot about their specific chemistry – and even more about their markets. We bring that knowledge to you at our technical centers and WACKER ACADEMY.

Do You Want to Enhance Your Product with a VINNAPAS® Polymer?
At your WACKER ACADEMY, we offer training in polymer chemistry and its application fields such as architectural coatings or mortar formulations.

Do You Want Your Products to Meet New Requirements?
Our technical center helps to optimize your formulation.

Are You Looking for New Business Ideas?
At your WACKER ACADEMY, we organize innovation workshops that are relevant to markets.
A VARIETY OF ARCHITECTURAL COATING APPLICATIONS

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The Benefits of Hydro-Plastification

Today’s challenge is to reduce VOCs without compromising performance. VINNAPAS® VAE dispersions enable low-VOC paints via “hydroplastification”: water takes the role of an internal flexibilizer, enhancing the coalescence of the polymer particles. They thus exhibit excellent film-forming characteristics without the addition of coalescing agents or solvents – even at temperatures below 5 °C. The resulting benefits: cost savings due to the reduction of unnecessary solvent or coalescing agents, a strongly minimized odor profile and therefore the achievement of strict ecolabel requirements such as chamber measurements and total VOC (TVOC) restrictions.

Excellent Hiding Power and Scrub Resistance

VINNAPAS® VAE dispersions exhibit excellent scrub resistance and hiding power, thus contributing to the performance and cost effectiveness of paints. Their excellent hiding power makes it possible to reduce the amount of titanium dioxide while still achieving the same contrast ratio at a given spreading rate compared to conventional styrene acrylics and other technologies. In addition, specific VINNAPAS® VAE dispersions have been optimized to offer good blocking behavior and high gloss retention – key features for silk and semi-gloss paints.

Comparison of hiding power of a VINNAPAS® VAE and a standard styrene acrylic (SA). The black background is much more noticeable in the SA sample compared to the VAE.
VINNAPAS® dispersions are used to formulate high-performance interior paints with a low to very low VOC content (<1g/l) and low odor for a variety of gloss levels. VAE technology offers the perfect combination of performance and environmental benefits at an attractive cost. PRIMIS® dispersions can be used as co-binders to enhance selected performance properties.

Featured Solutions

VINNAPAS® EP 3360 (ULS) for Higher Supply Chain Efficiency
VINNAPAS® EP 3360 (ULS), our highly versatile interior paint binder, which can be formulated across a broad range of PVC levels, has a solids content of 60%. Compared to standard binders with 50% solids content, this leads to a variety of efficiency benefits in the supply chain and production.

Higher Solids Content Leads to Higher Supply Chain Efficiency

<table>
<thead>
<tr>
<th>Standard Dispersion 50% Solids</th>
<th>VINNAPAS® EP 3360 60% Solids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solids content +20%</td>
<td>-17%</td>
</tr>
<tr>
<td>Storage Space -17%</td>
<td>-17%</td>
</tr>
<tr>
<td>Deliveries -17%</td>
<td>Orders -17%</td>
</tr>
</tbody>
</table>

PRIMIS® SAF 9000 for Highly Stain Resistant Paints
PRIMIS® SAF 9000 is a high-performance co-binder to improve stain resistance and easy-to-clean properties in interior paints. It can be used to reduce the impact of a variety of household stains including coffee, ketchup and text markers.

ENVIROMENTAL BENEFITS
- No solvents or coalescents needed
- Produced without APEO surfactants
- Low to very-low-VOC formulations possible (<1 g/l)
- Low to very-low-odor coatings possible

ECONOMICAL BENEFITS
- Favorable cost-in-use ratio
- Potential savings by using less titanium dioxide due to excellent hiding power

APPLICATION SPECTRUM
- From high- to low-PVC paints
- White, pastel or medium and deep color shades
Always a Perfect Fit
Our portfolio offers solutions for any climatic condition …

… and across all quality segments

For the entry level and mid-range segments, we offer VINNAPAS® dispersions for various degrees of
• Water resistance
• Mechanical strength
• Exterior weathering behavior
• Resistance to dirt pick-up

For the high-end segment, PRIMIS® AF combines organic and inorganic components, thus providing
• Very low dirt pick-up
• Very high color stability, even for sensitive organic pigments
• Reduction in snail trails/water soluble additives (e.g. emulsifier) leaching
• Excellent durability even when exposed to harsh conditions
• High water resistance
• High mechanical strength
PRIMIS® and VINNAPAS® dispersions are an attractive alternative to conventional acrylic- and styrene acrylic-systems for outdoor applications. Paints formulated with PRIMIS® and VINNAPAS® dispersions extend the longevity of houses by protecting the substrate.

Featured Solutions

PRIMIS® AF 1000 for Excellent Dirt Pick-Up and Color Stability

In an exterior paint formulation, PRIMIS® AF 1000 provides excellent dirt pick-up resistance and color stability compared to a typical styrene acrylic (SA) paint. After 1 year of exposure to strong UV and temperature conditions in Dubai (orientation 60 degrees south-east), there was much less dirt accumulated on the PRIMIS® AF 1000 sample on the right in comparison with the sample on the left. Furthermore, the dirt on the paint formulated with PRIMIS® AF 1000 could much easier be removed with a brush and the color was retained much better than on the commercial SA based paint.

VINNAPAS® Grades for Low Flammability

VINNAPAS® dispersions based on terpolymers containing vinyl chloride (VC) exhibit inherent low flammability for flame-retardant formulations that match Fire Class B under EN 13501-1.

PRIMIS® Grades Used As High-Performance Additives

For exterior paints, two high-performance additives can enhance your paint: PRIMIS® SAF 9000 is used as a co-binder to reduce snail trails, also known as water soluble additives (e.g. emulsifier) leaching.

Performance Benefits

- High formulation versatility for a variety of PVC levels
- Very low dirt pick-up
- Excellent color stability (even with organic pigments)
- Good water repellency
- Good water-vapor permeability
- Excellent compatibility with pigment pastes
- Ideal workability and applicability
- High to very high durability

Environmental Benefits

- No solvents or coalescents needed
- Produced without APEO surfactants
- Formulation of very-low-VOC paints possible (<1 g/l)

Economical Benefits

- Favorable cost-in-use ratio

Application Spectrum

- Exterior masonry paints
- Pastel, medium and deep color shades
- Elastomeric wall coatings and paints
Protecting Steel Against Fire

When exposed to fire, unprotected steel skeleton frames in high-rise buildings bend and collapse within five to ten minutes. Intumescent fire protection coatings are used to protect such steel girders in order to gain time for evacuation. The coating is usually applied one to four millimeters thick and, when subjected to heat, foams to tens of hundreds of times its original thickness, thus protecting the steel girders against the heat from the fire for a longer time period.

Fire Resistance Without Additives

Fire-resistant paints based on vinyl-chloride (VC) containing VINNAPAS® terpolymers improve fire-retardant effectiveness due to the self-extinguishing properties of VC binders and thus exhibit an inherent fire-retarding effect without the addition of fire-retarding agents or additives.

The graph shows the inherent fire resistance of VINNAPAS® CEZ 3031 in comparison to standard styrene acrylides (with or without flame retardancy additive ATH) in a base coat. The lower the calorific value the better the fire resistance and burning behavior.
VINNAPAS® dispersions are used in a wide variety of specialty applications, including roof paints, oil-resistant coatings, coir coatings and substrate preparation. Used as binders in intumescent or fire-resistant paints, they are essential components in the event of a fire.

**Featured Solution**

**Intumescent Coatings**
VINNAPAS® EZ 3067 and VINNAPAS® EZ 3112 are the perfect choice for water-based intumescent coatings as they enable the right amount of foaming and expansion, as well as providing long-term foam stability. At the same time, the adhesion and strength of the intumescent coatings improve, so that the protective layer firmly adheres to the substrate and forms a temporary heat barrier. Without the binder, the foam layer would be too brittle, thus leading to insufficient adhesion to the steel substrate. Furthermore, both grades are highly suitable for very-low-VOC and very-low-odor formulations.

Intumescent coatings protect steel structures by forming a protective layer for up to 120 minutes, thus keeping the temperature of the steel girders below 500 °C.
SIX GOOD REASONS TO BUY FROM WACKER

At WACKER, we believe in building and maintaining close partnerships with our customers, to achieve success together. Today and tomorrow. Talk to us!

Decades of Experience
- 75 years as market leader in VAE polymer dispersions
- 60 years as a leader in polymer powders

Diversified Portfolio
- Products for different performance profiles and different market segments
- Tailor-made products for local markets
- Innovative products for new applications

Constant High Quality
- Worldwide production in accordance with uniform standards and specifications
Powerful Customer Support

• Testing and technical support at technical centers
• Training and collaboration at WACKER ACADEMIES
• Different solutions for ordering, packaging and transport
• Fast and flexible delivery

Strong R&D

• Over 100 years of R&D
• Over 3% of sales spent on R&D (in 2016)
• 5,300 patents granted
• Collaborations with more than 40 academic institutions
• Global presence

Committed to Values

• Sustainability is our company philosophy
• We live up to our social responsibility as corporate citizens
WACKER is one of the world’s leading and most research-intensive chemical companies, with total sales of €4.6 billion. Products range from silicones, binders and polymer 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 a 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 with 4 business divisions, we offer our customers highly-specialized products and comprehensive service via 23 production sites, 18 technical competence centers, 13 WACKER ACADEMY training centers and 48 sales offices in Europe, North and South America, and Asia – including a presence in China. With a workforce of some 13,450, we see ourselves as a reliable innovation partner that develops trailblazing solutions for, and in collaboration with, our customers. We also help them boost their own success. Our technical centers employ local specialists who assist customers worldwide in the development of products tailored to regional demands, supporting them during every stage of their complex production processes, if required. WACKER e-solutions are online services provided via our customer portal and as integrated process solutions. Our customers and business partners thus benefit from comprehensive information and reliable service to enable projects and orders to be handled fast, reliably and highly efficiently. Visit us anywhere, anytime around the world at: www.wacker.com

All figures are based on fiscal 2016.
The data presented in this medium are in accordance with the present state of our knowledge but do not absolve the user from carefully checking all supplies immediately on receipt. We reserve the right to alter product constants within the scope of technical progress or new developments. The recommendations made in this medium should be checked by preliminary trials because of conditions during processing over which we have no control, especially where other companies’ raw materials are also being used. The information provided by us does not absolve the user from the obligation of investigating the possibility of infringement of third parties’ rights and, if necessary, clarifying the position. Recommendations for use do not constitute a warranty, either express or implied, of the fitness or suitability of the product for a particular purpose.