

PRESS RELEASE

Number 10

2019 EUROPEAN COATINGS SHOW

WACKER Presents New Product Line for
Polymeric Binders Based on Renewable Raw
Materials

Munich / Nuremberg, February 19, 2019 – WACKER will be introducing a new product line at the 2019 European Coatings Show: VINNECO®. These polymeric binders are partly based on renewable raw materials and produced by two different processes – one using biobased acetic acid and the other potato starch. The new dispersions are especially well suited for the production of interior paints and plasters. The 2019 European Coatings Show will be held in Nuremberg, Germany, March 19 – 21.

The use of environmentally friendly construction materials is playing an important role for more and more property developers. In 2017, biobased paints and coatings generated US\$1.14 billion in sales in Europe and the US.¹ Market researchers expect the market to expand at an average annual growth rate of 4.3 percent to a volume of US\$1.52 billion by 2024.

“Our customers are also increasingly looking for alternatives to binders based on fossil feedstocks,” says Dr. Lada Bemert, a senior technical service manager at WACKER POLYMERS. “We’ve updated our processes accordingly and our use of renewable raw materials is taking dispersion manufacturing in a new direction.” WACKER uses two methods for producing

¹ Study: “Growth Opportunities for Bio-based Chemicals and Materials in Europe and North America, 2017” / Frost & Sullivan

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binders based on renewable resources and will market these under the VINNECO® product line. The Munich-based chemical group will be unveiling five of these products at the 2019 European Coatings Show in Nuremberg.

Producing VINNECO® Using the Biomass Balance Method

For the first method of producing polymeric binders, WACKER uses biobased acetic acid. This substance is formed as a byproduct of wood-industry processes such as preparing fibrous material for paper manufacturing. The wood is sourced from forests certified by the PEFC® (*Programme for the Endorsement of Forest Certification Schemes*) and located within a 400-km radius of WACKER's Burghausen site.

WACKER uses biobased acetic acid and ethylene to produce vinyl acetate monomer, which – again using ethylene – is copolymerized to form vinyl acetate-ethylene (VAE). The binders are polymer dispersions that, in the example of wall paint, hold pigments, fillers and additives together and ensure optimum, lasting adhesion of the paint to the wall. The biobased acetic acid is extremely pure, contains little water and, thanks to its excellent quality, represents a real alternative to counterparts based on fossil resources such as natural gas or petroleum.

In production, biobased acetic acid can be blended with traditional acetic acid, directly coupling it to WACKER's existing production line. In terms of final properties, no aspects of either the binders or the wall paints suggest whether the VAE they contain was produced from conventional or from biobased acetic acid. The compound always exhibits the same chemical and physical behavior, regardless of whether it was derived from fossil-based or renewable raw materials. This allows paint manufacturers to retain their formulations without having to adjust them in any way for their plasters or wall paints.

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WACKER uses the biomass balance method for verifying the proportion of biobased acetic acid in the finished product. The method, which WACKER is applying for the first time in vinyl acetate-ethylene production, has been certified by the TÜV SÜD international technical inspectorate in accordance with the international CMS 71 standard. When customers order from the new VINNECO® product line, they can be sure that the required amount of bio-acetic acid has been fed into the integrated production system. As verification, the customer receives a TÜV certificate attesting to the use of the renewable raw material. This means that sustainable versions of the products in the VINNAPAS® family, which remains a well-known, classic brand, will be available under the new VINNECO® brand. At the 2019 European Coatings Show, WACKER will be introducing four specific products suitable for use as binders in plasters and paints. For the moment, only a relatively small share of WACKER's global output of VAE dispersions is based on renewable resources. The biomass balance approach, however, will allow the company to adjust those proportions going forward. In addition to its new binders for interior paints and plasters, WACKER offers biomass-balance versions of other product lines, such as vinyl acetate homopolymer dispersions and solid resins based on vinyl acetate.

Producing VINNECO® from Starch

For the second method, WACKER is cooperating with Dynaplak, a Dutch company that manufactures biobased raw materials. Dispersion production in this case is based on starch, which exhibits the properties of a binder when emulsified. This natural polymer is a side-stream product of potato processing. Experts at Dynaplak use this starch, which would otherwise be lost, and modify it with an innovative technology to improve its performance. WACKER combines Dynaplak's enhanced product with polymers based on vinyl acetate-

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ethylene to create a new, hybrid binder. The modified biopolymer accounts for 30 percent of the new product. This reduces the amount of traditional VAE derived from fossil-based raw materials by about a third, yielding a lower carbon footprint in the resulting product.

The result is a high-performance binder that WACKER will market under the name VINNECO® CT 7030 which is primarily designed for the production of interior paints. “Our new, hybrid product makes us one of the first companies on the market to combine vinyl acetate-ethylene polymers with starch for industrial applications,” says Dr. Martin Schierhorn, a chemist and marketing manager at WACKER POLYMERS. “We’ve maximized the proportion of starch as much as we can. When it comes to rheological properties, wet-scrub resistance, dispersibility and hiding power, VINNECO® CT 7030 can hold its own with traditional products made from fossil feedstocks.”

As this is a new product with its own property profile, paint manufacturers may need to adapt their formulations. The advantage is that the starch polymer allows them to directly utilize biomass in the finished product. The proportion of biobased material in VINNECO® CT 7030 can be determined with the help of carbon dating.

WACKER will be introducing more VINNECO® products over the course of 2019.

New at ECS 2019: The WACKER Forum

WACKER will be devoting a total of 240 square meters of floor space to solutions for paints, coatings, construction and adhesives applications at the 2019 European Coatings Show. More than 70 experts will be on hand at Booth 1-510 in Hall 1 to discuss the products and their applications with interested

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parties. Making a new appearance this year will be the WACKER Forum, right beside the main booth. Here, 15-minute presentations aimed at an international specialist audience will be held on technology, trends and innovations under the motto "Let's talk about..." More information about the program of presentations at the WACKER Forum can be found at www.wacker.com/ECS2019 soon.

About WACKER POLYMERS

WACKER can look back at over 80 years' experience in the manufacture of polymer binders. Today, WACKER is a leading producer of state-of-the-art binders and polymeric additives based on polyvinyl acetate and vinyl acetate copolymers. These take the form of dispersible polymer powders, dispersions, solid resins, and solutions. The products are used in construction chemicals, paints, surface coatings, adhesives and nonwovens, as well as in fiber composites and polymeric materials based on renewable resources. WACKER operates production sites for polymer binders in Germany, China, South Korea and the USA, as well as a global sales network and technical centers in all major regions.

Infobox: An Overview of the Five VINNECO® Products

VINNECO® products based on the biomass balance method can be identified by the abbreviation MB in their names. These are each available in two grades, in which either 60% or 100% of the fossil feedstocks have been replaced with bio-acetic acid.

VINNECO® EP 3360 (60MB)

Proportion of fossil feedstock replaced: 60%

Properties: aqueous polymer dispersion composed of vinyl acetate and ethylene, with a solids content of ~60%

Application areas: dispersion-based interior wall paints and plasters

VINNECO® EP 3360 (100MB)

Proportion of fossil feedstock replaced: 100%

Properties: aqueous polymer dispersion composed of vinyl acetate and ethylene, with a solids content of ~60%

Application areas: dispersion-based interior wall paints and plasters

VINNECO® EP 3777 (60MB)

Proportion of fossil feedstock replaced: 60%

Properties: aqueous polymer dispersion composed of vinyl acetate and ethylene, with a solids content of ~56%

Application areas: dispersion-based interior wall paints and plasters

VINNECO® EP 3777 (100MB)

Proportion of fossil feedstock replaced: 100%

Properties: aqueous polymer dispersion composed of vinyl acetate and ethylene, with a solids content of ~56%

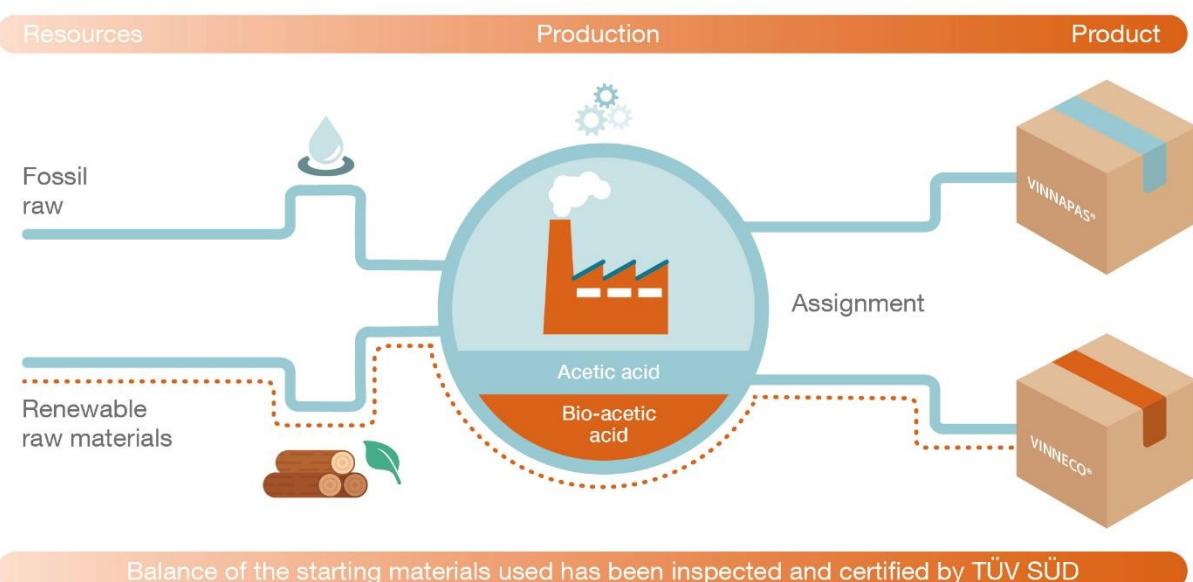
Application areas: dispersion-based interior wall paints and plasters

VINNECO® products based on starch for paint applications can be identified by the abbreviation CT in their names.

VINNECO® CT 7030

Properties: aqueous polymer dispersion composed of vinyl acetate, ethylene and modified starch, with a solids content of ~47%

Application areas: interior wall paints

About the Biomass Balance Method

(Graphic: Wacker Chemie AG)

If raw materials from renewable and traditional – usually fossil-based – resources are used as starting materials within the same integrated production system, the biomass balance approach can be used for mathematically assigning the portion of renewable raw materials to individual sales products. Fossil feedstocks are then mathematically assigned to the production of all other sales products. The approach is comparable to the green electricity certification system used in Germany. The international TÜV SÜD technical inspectorate has certified WACKER's mass balance method for verifying renewable raw materials in production. This gives WACKER a recognized method for tracking its use of renewable resources throughout the entire production process, up to the finished product. To qualify, suppliers of renewables must use a sustainable manufacturing process for the raw

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materials that WACKER purchases, and all of the required starting materials must be obtained from sustainable sources as well. WACKER must also undergo an annual TÜV inspection to verify that the appropriate amount of renewable raw materials is always added during the production of declared products.



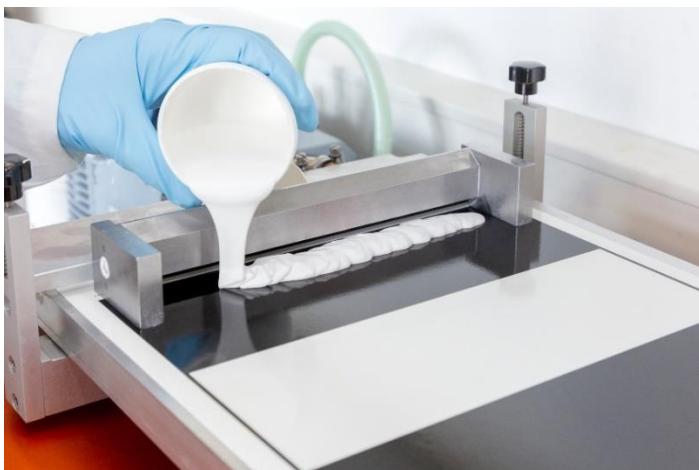
Bio-acetic acid is delivered to the Burghausen site's transfer station in tank cars.

(Photo: Wacker Chemie AG)

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Photos Relating to VINNECO® Based on Starch

At WACKER's applications laboratory, tests are performed on the hiding power of paint modified with the new polymer/starch hybrid binder. For this purpose, the paint is spread evenly over a black substrate. The contrast ratio is then measured. (Photo: Wacker Chemie AG)



The good hiding power of paint modified with VINNECO® CT 7030 is likewise confirmed when directly compared visually with conventional wall paint.
(Photo: Wacker Chemie AG)

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Note:

These photos are available for download at:

<http://www.wacker.com/pressreleases>

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The company in brief:

WACKER is a globally-active chemical company with some 13,800 employees and annual sales of around €4.9 billion (2017).
WACKER has a global network of 23 production sites, 21 technical competence centers and 50 sales offices.

WACKER SILICONES

Silicone fluids, emulsions, rubber grades and resins; silanes; pyrogenic silicas; thermoplastic silicone elastomers

WACKER POLYMERS

Polyvinyl acetates and vinyl acetate copolymers and terpolymers in the form of dispersible polymer powders, dispersions, solid resins and solutions

WACKER BIOSOLUTIONS

Biotech products such as cyclodextrins, cysteine and biologics, as well as fine chemicals and PVAc solid resins

WACKER POLYSILICON

Polysilicon for the semiconductor and photovoltaic industries