

VINNEVA®

Booster for Bitumen Modification of Water-Based Bitumen Emulsions

WACKER has developed high-performance polymer binders based on vinyl acetate-ethylene (VAE) copolymers and terpolymers specifically for bitumen emulsions. VINNEVA® is a new range of polymers for modifying bitumen emulsions, which can be used for manufacturing bitumen-based primers, coating and bitumen water-proofing emulsions.

VINNEVA® offers several advantages over the traditional polymers that have been used in bitumen emulsions to date. Our polymers have passed and can meet required European and ASTM standards.

At a Glance: Performance Benefits of VINNEVA® Modified Bitumen Emulsions

- Improved adhesion and increased durability
- Solvent free
- Highly compatible with bitumen emulsions
- Excellent elongation and elastic recovery
- Increased crack-bridging ability even at low temperatures
- Lower water absorption
- Decreased drying times
- Reduced residual tack
- Reduces or even eliminates the need for ammonia and acrylic thickeners
- Reduces bitumen content in formulations by introducing filler

VINNEVA® Offers Flexibility That Sticks WACKER individually tailors its VINNEVA® polymers to the bitumen composition and additives. With support from the experts at WACKER's global technical centers, manufacturers can formulate coatings in which key properties such as elasticity, elongation at break and water tightness are superior to those of products based on other polymers.

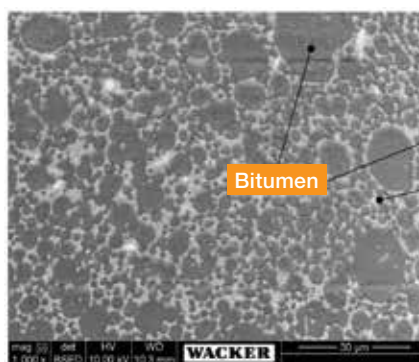
Because VINNEVA® polymers are based on natural gas in addition to petroleum, their price fluctuates less in the long term than that of other polymers used for bitumen modification. VINNEVA® has successfully replaced chlorine containing

polymers, and the price of its monomers fluctuates less than that of styrene monomers.

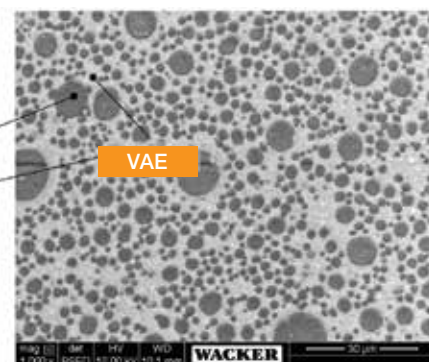
VINNEVA® polymers can be post-added to the bitumen emulsion, which can be used for wide range of applications (see reverse page).

SEM Images of Dried VAE-Modified Bitumen Emulsion Membrane Clearly Show Continuous VAE Polymer Network

5% Polymer Loading



20% Polymer Loading



Bitumen primer



Bitumen coating



Bitumen waterproofing emulsion (1K/2K)

Applications

VINNEVA® Modified Bitumen Primer

Bitumen-based primers are used extensively to prime and seal a variety of surfaces, including concrete for roof coatings, exterior wall coatings, masonry and timber surfaces, and can also be used before the application of bitumen sheets. VINNEVA® modified bitumen emulsions for manufacturing primers exhibit improved elongation and water resistance, and help reduce residual tack. While solvent-based bitumen primers are also traditionally used, their VOC content is high, posing health and environmental risks.

VINNEVA® Modified Bitumen Coating

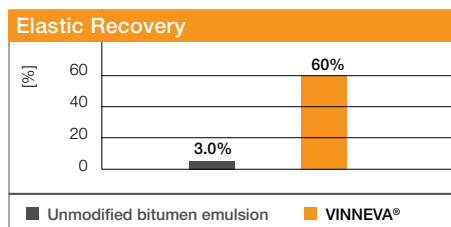
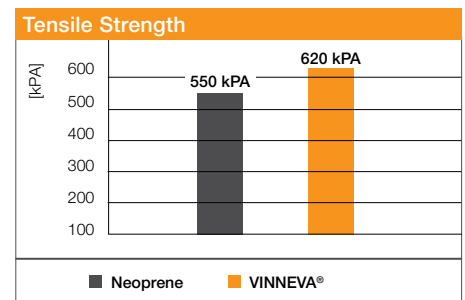
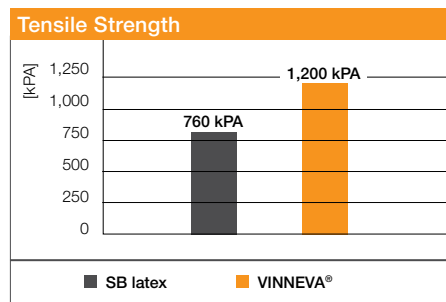
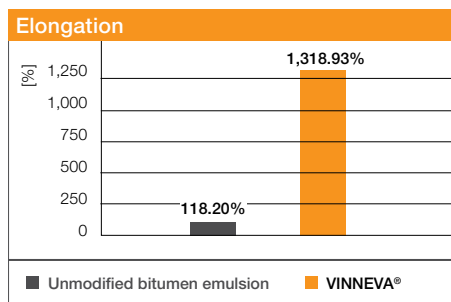
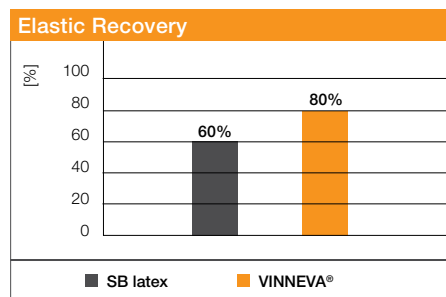
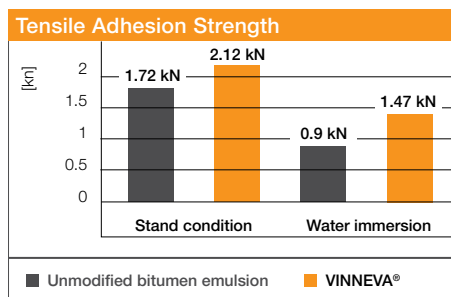
VINNEVA® polymers enhance the properties of bitumen-based building coatings, delivering exceptional adhesion to concrete and masonry. VINNEVA® modified bitumen also protects roofs and base-ments, exhibiting excellent elongation and elastic recovery compared to traditional SA and SBR systems.

The following charts show a comparison between styrene-butadiene latex and a VINNEVA® modified bitumen emulsion:

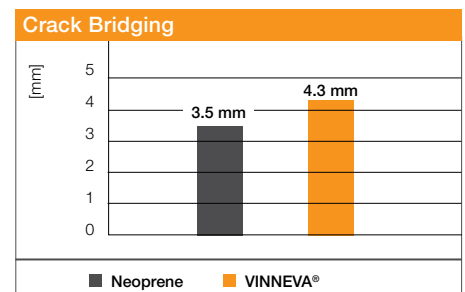
VINNEVA® Modified Bitumen Water-proofing Emulsions Suitable for One-(1K) and Two-Component (2K) Systems

VINNEVA® polymers can also enhance fiber-reinforced or filled bitumen coatings. Plus, the polymers are ideal for optimizing two-component systems consisting of a liquid component – the polymer-modified bitumen emulsion – and a powder component made of cement and fillers. These systems can be applied in particularly thick layers. VINNEVA® polymers exhibit improved tensile strength and crack-bridging properties compared to traditional SBR and neoprene-based systems and can successfully replace chlorine-containing polymers.

The following charts provide a comparison between neoprene latex and a VINNEVA® modified bitumen emulsion:



Note: Actual results may vary and always depend on the formulation, emulsifier, bitumen, additives, filler, polymer and other factors.



Note: Solids content of binder formulation = ~10%