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VINYL ACETATE/ETHYLENE (VAE) EMULSION

Celanese emulsion polymers is a global leader in vinyl acetate/ethylene (VAE) emulsions. We manufacture these high-performance emulsions in all three major regions of the world at our facilities throughout North America, Europe and Asia. More importantly, our employees are experts in polymerization, process technology, manufacturing and application technology.

VAE emulsions are utilized globally in a wide variety of industrial and consumer applications, including:

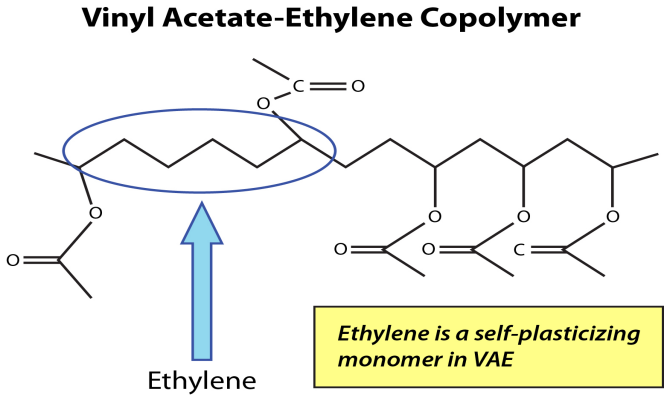
- paints and coatings
- water-based adhesives for woodworking and paper packaging
- non-wovens (engineered fabrics)
- paper saturations/specialties
- paper and paperboard coatings
- carpet-backings
- apparel and textile finishing processes
- redispersible powders
- waterproofing coatings
- building and construction products
- glass-fiber sizings and secondary binder technologies

View specific products and product grades throughout our website.

Synthesizing VAE emulsions

Vinyl acetate ethylene (VAE) emulsions are based on the copolymerization of vinyl acetate and ethylene, in which the vinyl acetate content can range between 60 and 95 percent, and the ethylene content ranges between 5 and 40 percent of the tc formulation. This product should not be confused with the ethylene vinyl acetate (EVA) copolymers, in which the vinyl acet generally ranges in composition from 10 to 40 percent, and ethylene can vary between 60 and 90 percent of the formulatic VAEs are water-based emulsions, whereas EVAs are solid materials used for hot-melt and plastic molding applications. Celanese also manufactures EVA through our EVA polymers Division (/eva-polymers.aspx). VAEs can also be dried, which technology pioneered for use in powder polymers.

High-pressure reactors are required to synthesize VAE emulsions from vinyl acetate monomer (VAM) and ethylene.



(/-/media/Emulsion Polymers/Images/RTF Images/VAE Chain Structure.jpg)

The Chemistry of VAE Emulsions

VAE emulsions offer considerable performance advantages over PVAc homopolymers, due to the ability to alter the glass transition temperature (Tg°C) through the incorporation of the ethylene monomer. As the ethylene content increases, the T decreases. In contrast to PVAc, VAE polymerization utilizes high-pressure reactions, ranging between 200 and 2000 psi's. contrast, ethylene plasticizes PVAc by increasing the flexibility of the polymer backbone. Both effects result in a lowering o the Tg of the final copolymer. On a weight basis, ethylene is far more effective, a fact that is reflected in the low Tg of polyethylene homopolymer (below -80 C). In addition, poly (vinyl acetate ethylene) (VAE) copolymers possess enhanced toughness, flexibility and serviceability. Over the years, therefore, there has been extensive research on the properties of V and much of it has been carried out in the polymer industry.

Celanese {NYSE: CE} is a global technology and specialty materials company that engineers and manufactures a wide variety of products essential to everyday living.

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