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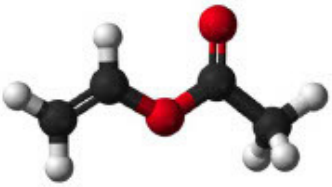
Vinyl acetate or vinyl acetate monomer (VAM)



Vinyl acetate is an organic compound with the formula $CH_3CO_2CH=CH_2$. This colourless liquid is the precursor to polyvinyl acetate and ethene-vinyl acetate copolymers, important industrial polymers

Vinyl acetate monomer (VAM) is a significant intermediate used in the production of a wide range of resins and polymers for paints & coatings, adhesives, glues & sealants, elastomers, textile finishes, paper coatings, binders, films, and a myriad of other industrial and consumer applications. It efficiently homo-polymerizes to polyvinyl acetate (PVA), and VAM can be used in numerous random copolymers and terpolymers such as ethylene-vinyl acetate copolymers, vinyl-acrylic resins, vinyl acetate-acrylic acid copolymers, and vinyl acetate-vinyl chloride copolymers. With the wide diversity of polymerization options, VAM has allowed the design of products with a wide spectrum of cost and performance profiles.

VAM Applications

The largest end-use for VAM is in the production of polyvinyl acetate resins as a base for adhesives and coatings, as well as a feedstock for derivative resins like polyvinyl alcohol (PVOH). Polyvinyl acetate emulsions and resins are low in cost and convenient to use, and they have a wide application range. PVA is likely best

known as the base component of household white glues used for bonding paper, fabrics, wood, and plastic.

PVA represents over half of the total usage of VAM. In addition to uses in paints, coatings, adhesives, and binders, PVAs are feedstock's for other large-volume systems such as polyvinyl alcohol (PVOH), polyvinyl butyral (PVB,) and polyvinyl formal (PVF). PVOH is the largest use for PVAs, followed by adhesives and paints & coatings.

A fast-growing use of VAM is the manufacture of vinyl acetate-ethylene (VAE) and ethylene-vinyl acetate (EVA) copolymers. As the VAM content increases in an ethylene-vinyl acetate copolymer, crystallinity decreases and tensile properties decrease. However, flexibility, toughness and adhesive strength increase. At a level of 50 percent, EVAs are amorphous.

VAEs with more than 60 percent VAM content are used in coatings, adhesives, cements, and plasters . EVAs with less than 40 percent VAM content are thermoplastics used for elastomeric films, extrusion coating, and adhesives. EVAs are further employed in the production of ethylene vinyl alcohol (EVOH) copolymers with excellent gas barrier properties useful in multi-layer food packaging and agricultural films, beverage & cosmetic bottles, and barrier layers of plastic gasoline tanks.

A wide variety of vinyl acrylic copolymer options are available. Vinyl acrylic emulsions are economical products that find extensive usage in interior architectural paints & caulks, adhesives & sealants, paper & textile binders, engineered fabrics, and pigment dispersions. Acrylic monomers like ethyl, butyl and 2-ethylhexyl acrylates enhance the performance of copolymers by improving flexibility, water resistance, adhesion, and scrub & stain resistance. Ter-monomers are also used like ethylene and acrylic acid in these systems.