

NCC's Resin Flooring Site –

www.resinflooringsite.co.uk

Vinyl Ester Resins

Vinyl Ester Resin, or Vinylester as it was originally called, is a synthetic resin produced by the 'esterification' of an epoxy resin with an unsaturated monocarboxylic acid. 'Esterification' is the chemical term for a process involving the interaction of a compound possessing a hydroxyl group with an acid, and the elimination of water. The reaction product when the base compound used is an epoxide material is known as a 'Vinyl Ester', which is a solid that is then dissolved in a reactive solvent, usually styrene and by around 35 – 45% by weight.

There are also some compounds that are marketed by chemical companies as 'Epoxy Vinyl Ester Resins' and/or 'Novolac Epoxy Vinyl Ester Resins' – although these particular formulations / grades of vinyl ester resin are not for site use as they are extremely sensitive in mixing and application, so can only be used in strictly controlled factory environments, and for moulding applications generally.

Vinyl Ester Resin Flooring

The vinyl ester resins that are suitable for use in formulating floor finishes and protective coating products for secondary containment areas such as bund linings can be used where their performance, particularly in terms of their chemical resistance is an advantage. They also have an extremely free-flowing viscosity and are therefore easy to apply in the build up of laminated Fibre / Fabric Reinforced Plastic (FRP) systems and for filled screeds and renders where additional impact and abrasion or thermal shock resistance is required.

Additionally they are also fast curing and hardening in comparison with most epoxies and PU systems, which is often also an advantage because of the shorter downtimes in refurbishment flooring.

There is also now a so called 'new generation' of styrene-free vinyl ester resins or epoxy vinyl resin products that have started to be promoted, but this is mostly marketing speak and these materials should correctly be called Epoxy Acrylate Resins, and these products have significantly inferior properties

So to summarise the advantages, disadvantages and limitations of vinyl ester resins:

Vinyl Ester Resin Flooring Advantages

- Good resistance to acids and alkalis, including strong nitric acid
- Good resistance to hydrocarbon solvents
- Excellent resistance to strong oxidising agents i.e. chlorine bleach
- Fast to very fast curing and hardening

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Vinyl Ester Resin Flooring Disadvantages

Solvent containing components on site

Difficult to apply at lower temperatures

Cannot be stored for long periods or used at higher temperatures

Typical Uses of Vinyl Ester Flooring

The chemical processing and waste water treatment sectors of industry are now increasingly using vinyl ester resin floors and coatings to withstand corrosive chemical attack. Vinyl ester resins have a long history of this type of application, for example they are also used to fabricate components for Flue Gas De-Sulphurisation (FGD) processes in the Power Industry.

Mortars and screed can be produced with vinyl ester resins incorporating silicate and other acid / chemically resistant fillers and aggregates, to produce chemically resistant screeds and brick / tile bedding and jointing materials.

This type of vinyl ester resin such as in the Atako ATB-300 range of systems is also used for multi-layer Glass Flake system build-ups, which are widely used in industrial and waste processing or storage areas with high concentrations of strong acids and strong oxidising agents.

NCC Resin Flooring Specialists can advise you on the most suitable vinyl ester or other resin coating system solution, together with appropriately experienced specialist contractors for your specific project needs. Please call any of our offices for assistance from our resin flooring experts.