

PROCESSING TECHNIQUE FOR 3-D DISTANCE FABRICS IN HAND LAY-UP


The 3-D woven distance fabric is used in Fiberglass Reinforced Plastics. The three-dimensional woven fabric out of 100% E-glass can be used in combination with various resins like polyester, epoxy, vinylester and phenolic (fire-retardant).

The 3-D fabric is impregnated with a thermosetting resin: the fabric absorbs the resin due to the capillary action of the yarns. During impregnation/rolling the fabric bounces back to its original pre-set height. For polyester and phenolic resin we recommend a resin amount of 110 % of the fabric weight. For epoxy resin we recommend a resin amount of 95% of the fabric weight.

The processing of the 3-D fabric in the hand lay-up process runs in a number of steps:

- *First calculate the total required amount of resin (see advise above: for small products it is recommended that an additional amount of resin up to 30% is used).*
- *Divide approximately 40% of the required amount of resin evenly over the surface of the mould.*
- *Then bring in the 3-D fabric and roll with a mohair roller (at considerable pressure) the glass mat in the resin.*
- *Divide then the remaining 60% of the resin over the top of the fabric. Through capillary action of the E-glass yarns the fabric is impregnated automatically.*
- *Next softly rolling the top layer of the fabric will secure a plain surface. Maximum (pre-set) height is achieved by ending with gently rolling in weft direction against the pile direction.*
- *Additional reinforcement layers can be applied wet-in-wet on both sides of the 3-D laminate.*

After hardening and curing this results in a rigid and very light weight sandwich laminate with excellent mechanical properties and high resistance against delamination.

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