

designed to achieve a minimum working life of 60 years under all applicable standard loadings, environmental and installation conditions.

- e) Both internal and external surfaces shall be free from irregularities, which would impair the ability of the component to conform to the requirements of European Standard BS/DIN EN 14364.

Materials and pipe wall construction

The pipe or fitting shall be constructed using chopped and/or continuous glass filaments, strands or roving, mats or fabric, synthetic veils, and polyester/ vinyl ester resin without fillers and if applicable additives necessary to impart specific properties to the resin. The pipe as whole and the part of pipe used for fittings may also incorporate aggregates. All the raw materials used shall be from the approved list of suppliers.

I. Filament Wound (FW) GRP pipes and fittings:

- a) Resins.
- Vinyl ester shall be used in the internal resin rich liner of the pipe and fittings. Isophthalic or vinyl ester shall be used in the structural wall of the pipes and fittings, as per the design application requirements. All resins shall be tested in accordance with ASTM C-581 or applicable standard. Provide resin systems to the requirements of BS 3532 type-B or to applicable standard.
 - Resins shall be cured to achieve 90% of the manufacturer's recommended Barcol hardness value, and may be tested by external laboratories for their authenticity of type by random sampling, during the project.
- b) Additives.
- The use of additives such as fire retardant, UV inhibitors or coloured pigments or dyes shall be subject to the approval of the Engineer and will only be approved in exceptional circumstances.
- c) Aggregates and fillers.
- Sand aggregates shall be clean, graded silica sand containing no impurities and be in accordance with BS/DIN EN 14364.