

## **IS 13593: 1992 UPVC Pipe Fittings for Use with UPVC Pipes in the Suction and Delivery Lines of Agricultural Pumps**

Unplasticized PVC (UPVC) pipes are increasingly used in the suction and delivery lines of agricultural pumps due to their lower frictional values and cost advantages over other materials. These pipes are often exposed to sunlight and the atmosphere, where standard UPVC pipes conforming to IS 4985:1988 can deteriorate under ultraviolet (UV) rays. Additionally, UPVC pipes in these lines are frequently subjected to water hammer effects and vibrations, which can compromise durability. As a result, a specific standard, IS 12231:1987, was established for UPVC pipes designed for such demanding applications.

Special fittings compatible with UPVC pipes specified in IS 12231:1987 are also essential. These fittings include couplers, end pieces, male and female threaded pieces, bends, and reducer couplers, which must withstand the UV exposure, impact loads during pump shutdown, and vibrations during operation. Conventional fittings conforming to IS 4985:1988 are not suitable for these conditions, necessitating this standard.

This standard covers requirements for materials, dimensions, workmanship, performance, and marking for a range of UPVC fittings used in agricultural pump lines, including:

- a) Couplers
- b) 90° Bends
- c) End Pieces (or Tail Pieces)
- d) Reducer Couplers
- e) Male Threaded Pieces (MTPs)
- f) Female Threaded Pieces (FTP)
- g) Reducer Threaded Pieces
- h) End Piece Rings

Specifications for the overall length, socket depth, and flanged portion of fittings like couplers, end pieces, bends, and reducers are detailed in Table 1 of the standard. Similarly, Table 2 covers the overall length, thickness, and threaded portion length of pieces like Male Threaded Piece/Adaptor, Female Threaded Piece/Adaptor, and Reducer Male Threaded Piece.

The standard mandates performance tests, including a Vacuum Test and a Hydrostatic Test, to confirm these fittings meet durability and functionality criteria. Sampling methods and conformity requirements are also specified to ensure quality across products.