



## **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 widely used in the suction and delivery lines of agricultural pumps due to their **lower frictional values** and cost benefits compared to other materials. However, these pipes face challenging conditions, such as exposure to sunlight and atmospheric elements, where standard UPVC pipes conforming to IS 4985:1988 can degrade under ultraviolet (UV) radiation. Additionally, UPVC pipes in these lines are subject to water hammer effects and vibrations that can affect their durability.

The UPVC fittings used in agricultural pump lines are expected to be **resilient against UV exposure** and withstand **impact loads from pump operations** without compromising performance. This necessitates the use of specialised fittings designed to match the robustness of UPVC pipes as per IS 12231:1987.

The Indian Standard, IS 13593:1992, addresses these expectations by specifying requirements for UPVC fittings compatible with IS 12231:1987 pipes. These fittings include:

- Couplers
- 90° Bends
- End Pieces (or Tail Pieces)
- Reducer Couplers
- Male Threaded Pieces (MTPs)
- Female Threaded Pieces (FTPs)
- Reducer Threaded Pieces
- End Piece Rings

The standard outlines detailed specifications for **materials, dimensions, workmanship, performance, and marking** of these fittings. It provides specific measurements for the **overall length, socket depth, and flanged portions for couplers, end pieces, bends, and reducer couplers**, as presented in **Table 1**. Additionally, **Table 2** specifies dimensions for the **overall length, thickness, and threaded portions of Male Threaded Piece/Adaptor, Female Threaded Piece/Adaptor, and Reducer Male Threaded Piece**.

Performance tests, including a **Vacuum Test** and a **Hydrostatic Test**, are mandated to ensure that these fittings can sustain the demanding conditions they are exposed to in agricultural pump lines. The standard also prescribes **sampling methods and conformity criteria**, ensuring that UPVC pipe fittings consistently meet the necessary durability and functionality standards for reliable use in agriculture.