



**FLOKING**

# Installation Manual

As Per IS 16477:2017

## OPVC Pipes of Class 500 Orientation IS 16477:2017

### 1. General:

This Indian Standard specifies the requirements of pipes and joints made of oriented unplasticized poly(vinyl chloride) (PVC-O), for piping systems intended to be used underground or above-ground for water mains and services, pressurized sewer systems and irrigation systems, as an innovative alternate..

The piping system according to this Indian Standard is intended for the conveyance of cold water under pressure, and are suitable for conveyance of water, including potable water, up to and including 45 °C, and especially in those applications where special performance requirements are needed, such as impact loads and pressure fluctuations, up to pressure of 2.5Mpa.

Amorphous polymer of PVC in which the molecules are located randomly. However, under certain conditions of pressure, temperature and speed, by stretching the material, it is possible to orient the polymer molecules in the same direction. The result is a plastic with a layered structure called as Oriented Poly vinyl chloride Pipes or O-PVC Pipes of highest Orientation Class 500 with homogeneous SPIGOT including supply of Elastomeric sealing ring shall be manufactured as per Indian Standard IS 16647:2017. Orientation has two classes and Class 500 is the uppermost which has the Pipe features at the premium level.

### 2. Material

#### 2.1: General

The material from which the pipes are made shall be PVC-U Compound/formulation. This compound/formulation shall consist substantially of PVC-U resin/powder to which shall be added only those additives necessary to facilitate the production of pipes from IS 10148 and shall be uniformly dispersed.

#### 2.2 Effects of material on water quality

All plastics and non-plastic materials for components of the pvc piping system, e.g. pipes, fittings, valves, elastomeric sealing rings, and lubricants when in permanent or in temporary contact with water which is intended for human consumption, shall not adversely affect the quality of the drinking water.

### 3. Dimensions

The pipes shall be supplied in straight lengths of 6 Mtrs inclusive of the integral SPIGOT end and one no of elastomeric sealing ring per pipe. The dimensional tolerances shall be as per specified standards. After laying a marginal reduction would be there.

### 4. Jointing

Jointing shall be done using push-fit methodology. The plain end of the pipe to be placed in the SPIGOT end and to be pushed till the mark near the plain end completely vanish. Each pipe based on the diameter has its own overlapping distance.

## 5. Field sample inspection

The end user or the Department reserves the right to test the samples of pipes randomly picked up from project site/stores in terms of the specified clause of standards for testing at reputed laboratories.

## 6. Handling & Installation

### Unloading and handling:

- Unload the Pipes with reasonable care. When unloading by hand, remove one piece at a time and block the shipment to keep pipe from rolling off the truck. Do not drop pipe off the truck. Lower the Pipe into the trench. Do not drop.

- Pipes should not be dragged on the ground

### Trenching:

- Make sure the depth of the pipe Minimum 1 Mtrs up to 250mm; 1.2 Mtrs up to 400mm and width based on the site conditions.

- Ensure the pipe have been laid along the central line of the trench.

- Levelling of the surface over which the pipe is to be laid should be uniform

- There should be no sharp objects on the trench surface while laying the pipeline.

### Lowering pipe into the trench:

- Place the pipe and fittings into the trench using ropes or by hand. Do not throw the pipe or fittings into the trench or allow any part of the pipe to take an unrestrained fall onto to the trench bottom.

- Ensure there are no damaged materials before assembly begins.

### Cleaning and Inspection:

- The Plain end as well pipe spigot ends should be wiped clean before the assembly.

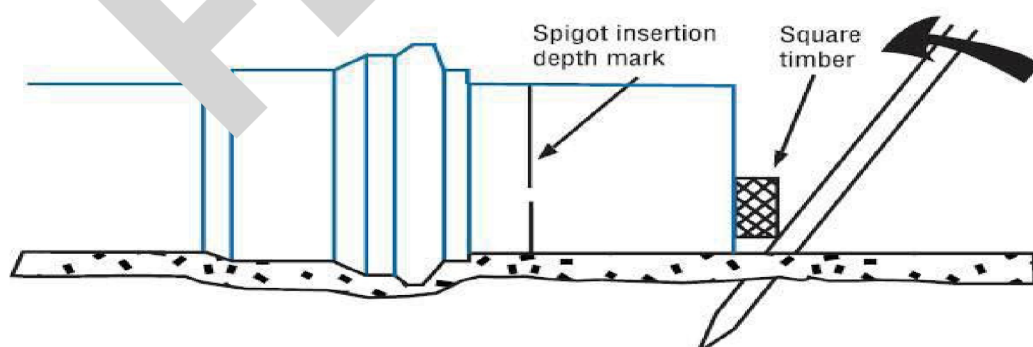
### Joining:

- Apply lubricant/soap/Normal water on the spigot end to facilitate the easy joining of pipes.

- The plain end of the pipe should be inserted till the dotted line marked on the spigot end of the other pipe.

- The bar and block assembly is recommended as the installer is able to feel the amount of force being used and whether the joint goes together smoothly. Larger pipe may require mechanical assistance to apply sufficient force to assemble the joint.

- Avoid over-insertion.



## 7. Installation of fittings and valves:

- DI fittings is compatible with OPVC Pipes, appropriate anchoring must be provided as suggested. Enclosed the diagram for reference.
- Use Spigot flange to connect to any valves. Use necessary gasket while joining.

## 8. Trench Bedding and back filling:

- 10-15cm granular material bedding to be provided.
- Fill on either side of the pipe before filling the top of the pipe.
  - Ensure fine stone-free material similar to the one laid on the trench floor, pressed hard to a thickness of 15-25 cm and to a maximum height of 30cm over the pipe.
- Compacting degree should be higher than 95% proctor Normal.
- There should not be any gap beneath the pipe.
- While backfilling there should be no sharp objects/rocks/stones in the backfill material which will be in contact with the pipe.
- The trench surface must ensure homogeneous, uniform and solid support along the entire length of the pipe.

## 9. Stacking:

- Store the pipes horizontally on a flat surface, on supports spaced 1.5 meters apart, to keep the pipes intact.
- Do not stack higher than 1.5 metres. Pipes should not be dragged on the ground.
- Ensure the SPIGOT end never touches the ground.
- Cover the pipe with tarpaulin to free the pipe from dirt and heat.

## 10. Drilling/cutting:

- Use machines to cut the pipe whenever it is required. Be sure you make a square cut.
  - After cutting the pipe, chamfer the end of the pipe to the same angle and length as provided on the factory finished pipe.

## 11. Testing and commissioning:

- Testing shall be performed only after the pipeline has been properly filled, flushed and purged of all air.
    - The specified test pressure shall be applied by means of an approved pumping assembly connected to the pipe properly.
      - To prevent pipe movement, the contractor shall have placed sufficient backfill prior to filling and testing of the pipe.
    - The test pressure shall not exceed the test pressure specified by the design engineer.
    - If necessary, the test pressure shall be maintained by additional pumping for the specified time during which the system and all exposed pipe, fittings valves and hydrants shall be carefully examined for leakage. All visible leaks shall be stopped.
    - All defective elements shall be repaired or removed and replaced.
- The test shall be repeated until the test requirements have been met.