

ASBESTOS CEMENT PIPES

Asbestos cement pipes are made of a mixture of asbestos paste and cement compressed by steel rollers to form a laminated material of great strength and density. Its carrying capacity remains substantially constant as when first laid, irrespective of the quality of water. It can be drilled and tapped for connecting but does not have the same strength or suitability for threading as iron and any leakage in the thread will become worse as time passes. However this difficulty can be overcome by screwing the ferrules through malleable iron saddles fixed at the point of service connections as is the general practice. The pipes are not suitable for use in sulphate soils.

The available safety against bursting under pressure and against failure in longitudinal bending, though less than that for spun iron pipes, is nevertheless adequate and increases as the pipe ages. In most cases good bedding of the pipes and the use of flexible joints are of greater importance in preventing failure by bending, than the strength of pipe itself. Flexible joints are used at regular intervals to provide for repairing of pipes if necessary.

AC pipes are manufactured from classes 5 to 25 and nominal diameters of 80 mm to 600 mm with the test pressure 5 to 25 Kg/cm². AC pipe can meet the general requirements of water supply undertaking for rising main as well as distribution main. It is classified as class 5, 10, 15, 20 and 25, which have test pressures 5, 10, 15, 20 and 25 Kgs/cm². respectively.

Working pressure shall not be greater than 50 % of test pressure for pumping mains and 67% for gravity mains.

Laying and Jointing:

The width of the trench should be uniform throughout the length and greater than the outside diameter of the pipe by 300mm on either side of the pipe. The depth of the trench is usually kept 1 meter on the top of the pipe. For heavy traffic a cover of at least 1.25 meter is provided on the top of the pipe.

The AC pipes to be laid are stacked along the trenches on the side or opposite to the spoils.

Each pipe should be examined for any defects such as cracks, chipped ends, crusting of the sides etc. The defective pipes should be removed forthwith from the site as otherwise they are likely to be mixed up with the good pipes. Before use the inside of the pipes will have to be cleaned. The lighter pipe weighing less than 80 Kg can be lowered in the trench by hand. If the sides of the trench slope too much ropes must be used. The pipes of medium weight upto 200 Kg are lowered by means of ropes looped around both the ends. One end of the rope is fastened to a wooden or steel stack driven into the ground and the other end of the rope is held by men and is slowly released to lower the pipe into the trench. After their being lowered into the trench they are aligned for jointing. The bed of the trench should be uniform.

Pipe Joints: There are two types of joints for AC pipes.

- a) Cast iron detachable joint, and
- b) AC coupling joint.

(a) Cast iron detachable Joints

This consists of two cast iron flanges, a cast iron central collar and two rubber rings along with a set of nuts and bolts, for a particular joint. For this joint of the AC pipes should have flush ends. For jointing a flange, a rubber ring and a collar are slipped to the first pipe in that order; a flange and a rubber ring being introduced from the jointing of the next pipe. Both the pipes are now aligned and the collar centralised and the joints of the flanges tightened with nuts and bolts.

(b) A.C Coupling Joint

This consists of an A.C Coupling and three special rubber rings. The pipes for these joints have chamfered ends. These rubber rings are positioned in the grooves inside the coupling, then grease is applied on the chamfered end and the pipe and coupling is pushed with the help of a jack against the pipe. The mouth of the pipe is then placed in the mouth of the coupling end and then pushed so as to bring the two chamfered ends close to each other. Wherever necessary change over from cast iron pipe to AC pipes or vice versa should be done with the help of suitable adapters IS 6530- 1972 may be followed for laying A.C pipes.

Pressure Testing: The procedure for the test as adopted generally is as follows

- a) At a time one section of the pipe line between two sluice valves is taken up for testing. The section usually taken is about 500 meters long.
- b) One of the valves is closed and the water is admitted into the pipe through the other, manipulating air valves suitably. (If there are no sluice valves in between the section, the end of the section can be sealed temporarily with an end cap having an outlet which can serve as an air relief vent or for filling the line as may be required. The pipe line after it is filled, should be allowed to stand for 24 hours before pressure testing).
- c) After filling this sluice valve is closed and the pipe section is isolated.
- d) Pressure gauges are fitted at suitable intervals on the crown into the holes meant for the purpose.
- e) The pipe section is then connected to the delivery side of the pump through a small valve.
- f) The pump is then worked till the pressure inside reaches the designed value which can be read from the pressure gauges fixed.
- g) After the required pressure has been attained, the valves is closed and the pump disconnected.
- h) The pipe is then kept under the desired pressure during inspection for any defect i.e. leakages at the joints etc. The test pressures will be generally as specified in 6.7.1 and Appendix 6.4. The water will then be emptied through scour valves and defects observed in the test will be rectified.