Anti- Leakage Pipe Sleeve System (Socket)

Field of Invention

This invention relates to plumbing and more particularly to pipe fittings for plastics material pipes.

Background

This invention will be discussed generally in relation to low pressure plastics pipes for use in application such as drains, stormwater and waste piping systems but the invention is no so limited and may be applied to other pipe line systems such as plastic material pressure piping systems.

Plastics materials pipes can be joined using solvent welding techniques. In such a technique a pipe end is inserted into a belled end of another pipe or a pipe fitting with a close fit and the solvent welding is intended to ensure that there is no leakage in the joint. To ensure a good fit the bell socket has a slight taper so that the bell is slightly narrower at the base of the bell socket (the root) than at the opening of the bell socket (the mouth). This ensures that with the slight softening with the joining solvent that in optimum conditions a good joint is made.

There can be a problem that if there is a misalignment in the pipe and socket or if insufficient adhesive is applied the pipe joint can leak.

It is an object of this invention to provide a pipe joining system which will overcome this problem or at least provide the practitioner with a useful alternative.

Brief Description of the Invention

In one form therefore the invention is said to reside in a plastics material pipe connection socket, the pipe having an pipe internal diameter and a pipe external diameter; the socket comprising an inner sleeve with an outside diameter substantially the pipe internal diameter and an outer sleeve with an inside diameter substantially the pipe external diameter, the inner and outer sleeves defining between them an annular recess to receive a pipe end to form a joint, wherein the annular recess is tapered so that in use, a tight fit is obtained and a good joint is made.

Preferably the outer sleeve is longer than the inner sleeve. For instance, the outer sleeve can be longer than the inner sleeve by approximately 10 to 20%. This will assist with alignment of the pipe into the socket by enabling a user to insert the pipe end inside the outer sleeve and thereby holding the pipe end in a round shape before engaging the pipe end into the annular recess.

There may be further included an inspection aperture in the outer sleeve. The inspection aperture can for instance, have a diameter of 5 mm and be positioned near the bottom of the annular recess such as 7.5 mm from the bottom of the recess.

The annular recess can be tapered.

In a preferred embodiment the pipe and the connection socket are formed from uPVC and the pipe and socket are connected using a solvent cement.

The connection socket can be formed onto the end of a length of pipe or it can be formed on a pipe fitting selected from the group comprising a plain bend, and inspection opening bend, a rear access bend, a vented access bend, a side access bend, an inspection opening junction, a rear access junction, a double access junction, a plain junction, an inspection opening coupling and a plain coupling.

In an alternative form the invention resides in a plastics material pipe connection socket, the socket comprising an inner cylindrical sleeve and an outer cylindrical sleeve, the inner and outer sleeves defining between them an annular recess to receive a pipe end to form a joint therebetween, wherein the annular recess is tapered so that in use, a tight fit is obtained and a good joint is made.

In an alternative form the invention resides in a plastics material pipe fitting comprising at least a first and a second connection arrangement to connect plastics material pipes using the connection arrangements, the pipe having an pipe internal diameter and a pipe external diameter; at least one of the connection arrangements comprising an inner sleeve with an outside diameter substantially the pipe internal diameter and an outer sleeve with an inside diameter substantially the pipe external diameter, the inner and outer sleeves defining between them an annular recess to receive the pipe end to form the connection, wherein the annular recess is tapered so that in use, a tight fit is obtained and a good joint is made.

Preferably the outer sleeve is longer than the inner sleeve. For instance, the outer sleeve can be longer than the inner sleeve by approximately 10 to 20%. This will assist with alignment of the pipe into the socket.

There may be further included an inspection aperture in the outer sleeve. The inspection aperture can for instance, have a diameter of 5 mm and be positioned near the bottom of the annular recess.

~~The annular recess can be tapered~~.

In one form, the taper is such that at a mouth end nearest an open end of the socket, the annular recess is wider than at a root end nearest the pipe.

In one form, the taper on the annular recess is provided on either the outer or the inner sleeve.

In one form, the taper on the annular recess is provided in each of the inner and outer sleeve.

In a preferred embodiment the pipe fitting is formed from uPVC and adapted for connection using a solvent cement.

CLAIMS

1. A plastics material pipe connection socket, the pipe having an pipe internal diameter and a pipe external diameter; the socket comprising an inner sleeve with an outside diameter substantially the pipe internal diameter and an outer sleeve with an inside diameter substantially the pipe external diameter, the inner and outer sleeves defining between them an annular recess to receive a pipe end to form a joint, wherein the annular recess is tapered so that in use, a tight fit is obtained and a good joint is made.

2. ~~A~~ The plastics material pipe connection socket as in Claim 1 wherein the outer sleeve is longer than the inner sleeve.

3. ~~A~~ The plastics material pipe connection socket as in Claim 1 wherein the outer sleeve is longer than the inner sleeve by approximately 10 to 20%.

4. ~~A~~ The plastics material pipe connection socket as in Claim 1 further including an inspection aperture in the outer sleeve.

5. ~~A~~ The plastics material pipe connection socket as in Claim 1 further including two inspection apertures in diametrically opposed sides of the outer sleeve.

6. ~~A~~ The plastics material pipe connection socket as in Claim 1 further including an inspection aperture in the outer sleeve the inspection aperture having a diameter of 5 mm and being near the bottom of the annular recess.

7. ~~A~~ The plastics material pipe connection socket as in Claim 1 wherein the taper is such that at a mouth end nearest an open end of the socket, the annular recess is ~~tapered~~ wider than at a root end nearest the pipe.

8. The plastics material pipe connection socket as in Claim 1, wherein the taper on the annular recess is provided on either the outer or the inner sleeve.

9. The plastics material pipe connection socket as in Claim 1, wherein the taper on the annular recess is provided in each of the inner and outer sleeve.

~~8~~ 10. ~~A~~ The plastics material pipe connection socket as in Claim 1 wherein the pipe and the connection socket is formed from uPVC and the pipe and socket are connected using a solvent cement.

~~9~~ 11. ~~A~~ The plastics material pipe connection socket as in Claim 1 wherein the connection socket is formed on a pipe fitting selected from the group comprising a plain bend, and inspection opening bend, a rear access bend, a vented access bend, a side access bend, an inspection opening junction, a rear access junction, a double access junction a plain junction and inspection opening coupling and a plain coupling.

~~10~~ 12 A plastics material pipe connection socket; the socket comprising an inner cylindrical sleeve and an outer cylindrical sleeve, the inner and outer sleeves defining between them an annular recess to receive a pipe end to form a joint therebetween, wherein the annular recess is tapered so that in use, a tight fit is obtained and a good joint is made.

~~11~~13. A plastics material pipe fitting comprising at least a first and a second connection arrangement to connect plastics material pipes using the connection arrangements, the pipe having an pipe internal diameter and a pipe external diameter; at least one of the connection arrangements comprising an inner sleeve with an outside diameter substantially the pipe internal diameter and an outer sleeve with an inside diameter substantially the pipe external diameter, the inner and outer sleeves defining between them an annular recess to receive the pipe end to form the connection, wherein the annular recess is tapered so that in use, a tight fit is obtained and a good joint is made.

~~12~~14. ~~A~~ The plastics material pipe fitting as in Claim ~~11~~ 13 wherein the outer sleeve is longer than the inner sleeve.

~~13~~15 . ~~A~~ The plastics material pipe fitting as in Claim ~~11~~ 13 further including an inspection aperture in the outer sleeve.

~~14~~ 16. ~~A~~ The plastics material pipe fitting as in Claim ~~11~~ 13 further including two inspection apertures in diametrically opposed sides of the outer sleeve.

~~15~~ 17. ~~A~~ The plastics material pipe fitting as in Claim ~~11~~ 13 wherein the taper is such that at a mouth end nearest an open end of the socket the annular recess is ~~tapered~~ wider that at a root end nearest the pipe.

18. The plastic material pipe fitting as in Claim 13, wherein the taper on the annular recess is provided on either the outer or the inner sleeve.

19. The plastic material pipe fitting as in Claim 13, wherein the taper on the annular recess is provided in each of the inner and outer sleeve.

~~16~~ 20. ~~A~~ The plastics material pipe fitting as in Claim ~~11~~ 13 wherein the connection socket is formed from uPVC.

~~17~~ 21. ~~A~~ The plastics material pipe fitting socket as in Claim ~~11~~ 13 wherein pipe fitting is selected from the group comprising a plain bend, and inspection opening bend, a rear access bend, a vented

access bend, a side access bend, an inspection opening junction, a rear access junction, a double access junction a plain junction and inspection opening coupling and a plain coupling.