All pipes of ND 250 or smaller shall have an external electrolytic zinc protection. In addition all pipes shall have an external coat of black varnish applied at the factory.

A special external bitumen-based hot applied coating, having a minimum thickness of 0.3 mm, shall be sprayed onto the pipes before laying to provide protection against corrosion.

Bends and tees

Bends and tees shall be lined inside with epoxy as specified for accessories and coated outside as specified above for pipes.

5.3.5.4 Polypropylene (PPRC) pipes

This kind of pipe shall be used for drinking water systems in the buildings. The installation, material and fittings shall be compatible with TS 9937 and international requirements. The Contractor shall provide the material catalogues with related standards to the Engineer's approval.

5.3.5.5 PVC and PP pipes

All PVC and PP pipes shall be manufactured by a quality assured manufacture in accordance with the ISO 9000 system. Un-plasticized PVC pipes and fittings for gravity drainage and sewerage shall comply with the relevant provisions of CEN Standard EN 1401, PP pipes shall comply with CEN Standard EN 1852. Un-plasticized PVC pipes and fittings for pressure pipes shall comply with the relevant provisions of CEN-standard EN 1452.

All connections to PVC and PP pipes must be performed by using single 45 branch; no saddle must be used.

Only pipes with a ring stiffness greater than 8 kN/m² may be used. Reference is made to ISO 9969.

5.3.5.6 High density polyethylene (HDPE) pipes

All HDPE pipes and fittings shall be manufactured by a quality assured manufacturer in accordance with the ISO 9000 system. HDPE pipes shall be manufactured from PE 100 material, as classified by the European Technical Committee Report CEN/TC 155. In accordance with ISO 12162 the PE 100 material shall have a minimum required strength (MRS) value of 10 MPa. The pipes and fittings shall be coloured blue (potable water), yellow (gas) or black (wastewater) and be suitable for below-ground use.

Gravity pipes shall be engineered light weight pipes with (structured wall pipe type) with ring stiffness larger than SN 8 kN/m2. The pipes shall be manufactured so that the cavity between the inner and outer pipe can be water filled.

Pressure pipes shall be in pressure class PN6 minimum.

PE pipes and fittings shall comply with the relevant provisions of CEN-standard EN12201 (water and wastewater) and EN1555 (gas).

Generally, all buried pipes shall be jointed using either butt or electro fusion welding techniques. Small diameter pipes (diameter<63 mm), pipes within structures and pipes connecting to metal fittings shall be jointed using mechanical jointing techniques, such as compression, flanged joints or push-fit joints.

Jointing of large pipes of the light weight type shall be made by extruder welding.

All welding shall be performed by certified welders holding licences not older than 12 months, and issued by a recognised institution approved by the manufacturer and the Engineer.