# *Annex B: Pipes and fittings specifications*

## Pipes

### *Polyethylene pipes and fittings*

B.1 Polyethylene service connection pipes and fittings shall be black PE80 medium-density polyethylene pipes (MDPE) and shall comply with the requirements of ISO 4427 Parts 1, 2, 3 and 5 or EN 12201 Parts 1, 2, 3 and 5. The pipes shall have a SDR (standard dimension ratio) of 11.

B.2 The polyethylene pipes and fittings shall be suitable for use above ground and underground for conveying potable water at a working pressure of up to 12 bar. Connection by fusion is the recommended method of joining polyethylene pipes wherever possible.

B.3 The polyethylene pipe shall meet the minimum requirements of the following specification:

(a) minimum density measured according to ISO 1183-2 shall be between 945 and 955kg/$m^3$;

(b) melt flow rate measured according to ISO 1133-1 with a 5kg load shall be between 0.75 and 0.95g/10min;

(c) tensile strength at yield, measured according to ISO 6259 shall be at least 18MPa;

(d) elongation at break, measured according to ISO 6259 Parts 1 and 2 shall be at least 350%; and

(e) thermal stability, as measured by the oxidation induction time, in accordance with ISO 11357-6 and at a temperature of 200°C shall be a minimum of 20 minutes.

B.4 The pipes shall be manufactured from polyethylene containing only those antioxidants, carbon black and other additives necessary for the manufacturing of the pipes and conforming to the requirements of ADWEA and international specifications.

B.5 If reworked material is added or used, it shall be clean, derived from the same resin, reground under the supervision of the same manufacturer, and shall be compatible with the material to which it is added.

B.6 The material of the polyethylene pipe which is in contact with or likely to come into contact with wholesome water shall not constitute a toxic hazard, shall not support microbial growth and shall not give rise to unpleasant taste, odour, cloudiness or discoloration of the water.