

**OFFICE OF THE WATER AUTHORITY**  
LEIGHTON CENTRE 12/F, 77 LEIGHTON ROAD, HONG KONG

(WITH CHINESE TRANSLATION)

Tel. No : 5-7900246

Ref. No : (22) in WWO 22/2198/80 II

15 October 1983

Dear Sir,

**Use of Polybutylene Pipes, Tubings and Fittings  
on Inside Services**

With immediate effect requests for approval to use small size polybutylene pipes/tubings and fittings up to 40 mm diameter on hot and cold water services will be considered by the Water Authority.

To ensure suitable application and acceptability to potable use, departmental staff have been instructed to exercise strict control over the use of the material. Approval will only be given where it can be guaranteed that the materials used are to a standard acceptable to the Authority (see last paragraph of this letter).

Requests for use of the material in a new building will only be considered if received directly from the authorised person concerned or from a licensed plumber nominated by him - such nomination having been advised in writing to this Authority.

As it has been a common practice for the electrical services of some buildings to be earthed via metallic water pipes and in view of the insulating property of polybutylene pipes/tubings, authorised persons or licensed plumbers should ensure that replacement of any of the existing metallic water pipes by polybutylene pipes will not cause the earthing system to cease to function before submitting applications for such replacement work.

All applications for the use of polybutylene pipe must contain information on the make, standard and other necessary details of the material.

The attached notes have been prepared on an advisory basis to assist authorised persons and licensed plumbers when considering the use of polybutylene pipes and tubings.

Yours faithfully,

Signed

(YEUNG On-ching)  
for Water Authority

Distribution

All Authorised Persons  
All Licensed Plumbers

c.c. B.D.D.  
H.D.  
WWO 15/3318/81  
ECS, Supt CS, ICS and AICS

**Notes on the Permitted Usage of  
Polybutylene (PB) Pipe, Tube and Fittings  
as Hot and Cold Inside Services**

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The use of polybutylene pipes and tubes for water services was first introduced in the late 60's and is now in fairly wide use in some parts of the world. Like other thermoplastic pipes polybutylene pipes and tubes are fabricated through the formulation and processing of chemical substances derived from the petroleum industry. Pipes may be fabricated to meet different specifications as well as different intended usages

To ensure the suitable application of PB pipes/tubes and acceptability for potable water services it is necessary to enforce strict specification requirements. The following illustrates the specifications acceptable to the Water Authority. Authorised Persons will have the responsibility for ensuring that approved materials are specified

Specification

(A) For cold water services

- (1) All pipes, tubes and fittings shall comply with the following standards as may be applicable :-
- (i) American Society for Testing and Materials :
    - ASTM D2662 - Polybutylene (PB) Plastic Pipe
    - ASTM D3000 - Polybutylene (PB) Plastic Pipe Based on Outside Diameter
    - ASTM D2666 - Polybutylene (PB) Plastic Tubing
  - (ii) American Water Works Association Standard :
    - ANSI/AWWA C902 - Polybutylene (PB) Pressure Pipe, Tubing and Fittings, ½" through 3", for Water
  - (iii) Canadian Standard Association :
    - CSA B137.7 Polybutylene Pipe for Cold Water Usage

- (2) The following Particular Specifications shall also be complied with :
- (i) Pipes and tubes shall have a minimum pressure rating of 160 psi at 23°C.
  - (ii) Pipes and tubes shall be indelibly marked at not greater than 1.5 metre interval to contain at least the following :
    - a) Nominal size
    - b) Material code designation - PB 2110
    - c) Pressure rating
    - d) The relevant standard designation (e.g. ASTM D2666, AWWA C902 or CSA B137.7)
    - e) Manufacturer's name or trademark
    - f) Certification mark of any of the following approving societies/agencies : NSF (National Sanitary Foundation), IAPMO (International Association of Plumbing and Mechanical Officials) or CSA (Canadian Standard Association)
  - (iii) Fittings shall be indelibly marked individually as in (ii) above unless the fitting size does not permit full marking. In such case size, material designation and pressure rating can be omitted.

(B) For hot water services

- (1) All pipes, tubes and fittings shall comply with the following standards :-
- (i) American Society for Testing & Materials :  
ASTM D3309                      Polybutylene (PB) Plastic Hot Water Distribution Systems
  - (ii) Canadian Standard Association :  
CSA B137.8                      Polybutylene Piping for Hot & Cold Water Distribution Systems
- (2) The following Particular Specifications shall also be complied with
- (i) Designed service temperature shall be up to 82°C.

- (ii) When plastic components/fittings are used these shall be of similar polybutylene materials as the pipes/tubes; or equivalent materials meeting long term requirement at 82°C specified by ASTM D3309.
- (iii) Pipes and tubes shall be indelibly marked at not greater than 1.5 metre interval to contain at least the following :-
  - a) Manufacturer's name or trade mark
  - b) Certification mark of any of the following approving societies/agencies : N&F (National Sanitary Foundation), IAMPO (International Association of Plumbing and Mechanical Officials) or CSA (Canadian Standard Association)
  - c) Standard designation - D3309 or B137.8
  - d) Material code designation - PB2110
  - e) Pressure rating at 82°C i.e. 100 psi or 690 kpa
  - f) Nominal size
  - g) Standard dimension ratio (SDR 11)
- (iv) Fittings shall be indelibly marked to contain at least the markings as in (iii) (a) (c) above.

(C) For both usages, if requested by the Water Authority, approval certification by a recognized authority regarding acceptability for the intended use must be furnished by the Authorised Person or Licensed Plumber before any pipework is installed.

(D) Notwithstanding the above specifications Polybutylene pipes/tubes and fittings approved by the National Water Council UK for usages as specified in (A) or (B) may be accepted by the Water Authority.

(E) Acceptance of pipes, tubes and fittings to other recognised National/International Standards will be subject to it being demonstrated that the requirements thereof are at least equivalent to those of the above required standards.

### Installation Notes

(1) The linear expansion for Polybutylene pipe/tube is approximately 13 mm per 10°C temperature change for every 10 metres of pipe/tube. Allowance shall be made for free thermal movement in long run of piping especially in hot water systems.

- (2) Maximum spacing between horizontal supports shall be 900 mm for all sizes. Pipes/tubes must not be rigidly secured at supports.
- (3) Pipes/tubes shall not be threaded. They must not be solvent welded nor glued. Joints shall normally be made by insertion type jointing fittings of various designs. Other jointing devices may also be available, some of which may need the application of special tools. Care should be taken to ensure suitability of the jointing method used.
- (4) Pipes/tubes may be bent for directional changes but the radius of curvature shall not be less than 10 times the diameter of the pipe or tube.
- (5) Not all Polybutylene pipes/tubes are designed to withstand long term exposure to sunlight. The appropriate type shall be chosen for exposed installation and checking shall be made with the manufacturer if protective painting is required in this situation.
- (6) Polybutylene hot water systems are not intended to be used for temperatures above 82°C. When making a connection to a heated cylinder where temperature could regularly exceed 82°C it is recommended that a short length of metal pipe be installed between the water heater outlet and the type system.
- (7) Polybutylene is an insulating material and hence PB pipes or tubes must not be used for earthing of electrical equipments.