

System design

Dimensions of plastic piping systems



Dimensional comparison

A wide range of thermoplastic piping systems, are available in both inch and metric dimensions. In all such cases, the outside diameter (O.D.) is a strictly controlled dimension fixed by internationally recognised manufacturing standards. The inside diameter changes according to the material, its wall thickness, and the pressure rating and therefore it is given a nominal dimension only, referred to as the nominal bore (N.B.).

Errors can occur both with the interpretation of the dimensional standards and in the definition of the required size. In general terms, systems of the same material made to either inch or metric sizes are not dimensionally compatible, except (for some materials) 2¹/₂" pipe which has the same outside diameter as 75mm pipe, and 5" pipe which has the same outside diameter as 140mm pipe. Transition fittings are needed to connect between inch and metric sized systems in all other dimensions.

Care needs to be taken to use a clear definition of the pipe size being used. Inch systems are always referred to using their nominal bore dimension (measured in either inches or mm). Metric systems, whilst always measured in millimetres, may be described by the outside diameter (O.D.) or more usually by their nominal bore dimension (DN), which is always expressed in millimetres. The following table shows a comparison between the approximate equivalent inch and metric sizes:

Nominal Bore (inch)	Inch System Outside Diameter		Metric System	
	British Standard (mm)	ASTM (mm)	Nominal Bore (DN) (mm)	Outside Diameter (mm)
			8	12
3/8	17.1	17.1	10	16
1/2	21.4	21.4	15	20
3/4	26.7	26.7	20	25
1	33.6	33.6	25	32
1 ¹ / ₄	42.2	42.2	32	40
1 ¹ / ₂	48.3	48.3	40	50
2	60.3	60.3	50	63
2 ¹ / ₂	75.2	73.0	65	75
3	88.9	88.9	80	90
4	114.3	114.3	100	110
			110	125
5	140.2	141.3	125	140
6	168.3	168.3	150	160
			175	200
8	219.1	219.1	200	225
			225	250
10	273.0	273.0	250	280
12	323.9	323.9	300	315
14	355.6	355.6	350	355
16	406.4	406.4	370	400