

## ARMAFLEX INFORMATION ON PART L

Armaflex insulation can be used on heating, hot and cold water services to meet Part L of the Building Regulations. Part L states that the insulation should comply with the requirements of the Domestic Building Services Compliance Guide or the Non-Domestic Building Services Compliance Guide. These are second tier documents to Part L, which give the recommended minimum provisions for the following:

- Domestic Building Services Compliance Guide:
  - Max. permissible heat loss allowable on heating and hot water pipes.
- Non-Domestic Building Services Compliance Guide:
  - Max. permissible heat loss on hot water and low, medium & high temperature heating.
  - Max. permissible heat gain on cold water supply pipes.
  - Condensation control.

The following tables give the required thickness of Class O Armaflex to meet these guides.

### Domestic Heating and Hot Water:

Pipe OD (mm)	Max. permissible heat loss (W/m)	Min. Class O Armaflex (mm)
10	7.23	12.0 (13)
12	7.35	14.8 (19)
15	7.89	16.8 (19)
22	9.12	19.8 (25)
28	10.07	21.8 (25)
35	11.08	23.9 (25)
42	12.19	25.0 (25)
54	14.12	26.1 (32)

As BS 5422:2009 Table 20

Line temperature = 60°C

Ambient = 15°C

### Non-Domestic Hot Water and Heating:

Pipework serving space heaters and hot water systems should be insulated in all areas outside of the heated building envelope. In addition, pipes should be insulated in all voids within the building envelope and within spaces that will normally be heated if there is a possibility that those spaces might be maintained at temperatures different to those maintained in other zones. The guiding principles are that control should be maximised and that heat loss from un-insulated pipes should only be permitted where the heat can be demonstrated as 'always useful'.

In order to demonstrate compliance the maximum permissible heat losses for different pipe sizes and temperatures, as given in the table below should not be exceeded.

<b>Maximum Permissible Heat Loss (W/m) (Min. Class O Armaflex thickness)</b>				
<b>Pipe OD (mm)</b>	<b>Hot Water</b>	<b>Low Temp. Heating &lt;95°C</b>	<b>Medium Temp. Heating 96-120°C</b>	<b>High Temp. Heating 121-150°C</b>
17.2	6.60 (30.1)	8.90 (30.6)	13.34 (28.7)	17.92 (28.2)
21.3	7.13 (32.4)	9.28 (35.6)	13.56 (35.5)	18.32 (34.4)
26.9	7.83 (34.6)	10.06 (38.9)	13.83 (44.2)	18.70 (42.9)
33.7	8.62 (36.8)	11.07 (41.1)	14.39 (52.0)	19.02 (52.7)
42.4	9.72 (37.9)	12.30 (43.2)	15.66 (56.6)	19.25 (66.0)
48.3	10.21 (40.1)	12.94 (45.4)	16.67 (57.4)	20.17 (69.1)
60.3	11.57 (41.3)	14.45 (47.7)	18.25 (61.3)	21.96 (74.6)
76.1	13.09 (43.6)	16.35 (49.9)	20.42 (65.2)	24.21 (80.1)
88.9	14.58 (43.6)	17.91 (51.2)	22.09 (66.8)	25.99 (83.2)
114.3	17.20 (44.8)	20.77 (53.5)	25.31 (70.7)	29.32 (88.7)
139.7	19.65 (46.1)	23.71 (54.3)	28.23 (73.8)	32.47 (92.6)
168.3	22.31 (47.3)	26.89 (55.9)	31.61 (76.2)	36.04 (95.7)
219.1	27.52 (47.6)	32.54 (57.4)	37.66 (78.5)	42.16 (100.4)
273.0	32.40 (48.9)	38.83 (57.4)	43.72 (80.9)	48.48 (103.5)

As BS 5422:2009 Tables 16 & 18 and Table 41 Section 11 Building Service Compliance Guide (2010)

Hot Water: Line Temperature = 60°C  
Ambient = 15°C

Heating:-

Low: Line Temperature = 75°C  
Ambient = 15°C

Medium: Line Temperature = 100°C  
Ambient = 15°C

High: Line Temperature = 125°C  
Ambient = 15°C

Cooled Pipework:

Cooled pipework should be insulated along its whole length in order to provide the necessary means of limiting heat gain. Control should be maximised and heat gain to uninsulated pipes should only be permitted where the proportion of the cooling load relating to distribution pipework is proven to be less than 1 per cent of total load.

In order to demonstrate compliance, the maximum permissible heat gain for different pipe sizes and temperatures, as given in the table below, should not be exceeded.

Although unrelated to meeting relevant energy efficiency requirements in building regulations, provision should also be made for control of condensation by following TIMSA guidance.



Maximum Permissible Heat Gain (W/m) (Min. Class O Armaflex thickness)			
Pipe OD (mm)	Temperature of Content (degrees C)		
	10	5	0
17.2	2.48 (20.4)	2.97 (25.7)	3.47 (29.5)
21.3	2.72 (21.8)	3.27 (26.8)	3.81 (30.7)
26.9	3.05 (22.9)	3.58 (29.0)	4.18 (32.9)
33.7	3.41 (24.2)	4.01 (30.2)	4.60 (35.1)
42.4	3.86 (25.4)	4.53 (31.4)	5.11 (37.3)
48.3	4.11 (26.4)	4.82 (32.6)	5.45 (38.4)
60.3	4.78 (26.7)	5.48 (33.8)	6.17 (39.7)
76.1	5.51 (27.9)	6.30 (35.0)	6.70 (44.8)
88.9	6.17 (28.2)	6.90 (36.3)	7.77 (42.1)
114.3	7.28 (29.5)	8.31 (36.5)	9.15 (43.5)
139.7	8.52 (29.8)	9.49 (37.9)	10.45 (44.7)
168.3	9.89 (30.0)	10.97 (38.2)	11.86 (46.1)
219.1	12.27 (30.5)	13.57 (38.6)	14.61 (46.4)
273.0	14.74 (31.0)	16.28 (39.0)	17.48 (46.8)

As BS 5422:2009 Table 11 and Table 42 Section 11 Building Service Compliance Guide (2010)  
 Temperature of content at 10, 5 and 0°C in 25°C ambient.

Condensation Control:

Pipe OD (mm)	Temperature of Content (degrees C)		
	10	5	0
Minimum Class O Armaflex Thickness (mm)			
17.2	8.7 (9)	11.6 (13)	14.3 (19)
21.3	9.0 (9)	12.1 (13)	15.0 (19)
26.9	9.4 (13)	12.7 (13)	15.7 (19)
33.7	9.7 (13)	13.2 (19)	16.3 (19)
42.4	10.0 (13)	13.7 (19)	17.0 (19)
48.3	10.2 (13)	13.9 (19)	17.4 (19)
60.3	10.5 (13)	14.4 (19)	18.0 (19)
76.1	10.7 (13)	14.8 (19)	18.6 (19)
88.9	10.9 (13)	15.0 (19)	18.9 (19)
114.3	11.1 (13)	15.4 (19)	19.5 (25)
139.7	11.2 (13)	15.7 (19)	19.9 (25)
168.3	11.4 (13)	15.9 (19)	20.2 (25)
219.1	11.5 (13)	16.2 (19)	20.7 (25)
273.0	11.6 (13)	16.4 (19)	21.0 (25)
323.9	11.7 (13)	16.5 (19)	21.2 (25)

355.6	11.7 (13)	16.6 (19)	21.3 (25)
406.4	11.8 (13)	16.7 (19)	21.4 (25)
457.0	11.8 (13)	16.7 (19)	21.5 (25)
508.0	11.8 (13)	16.8 (19)	21.6 (25)
610.0	11.9 (13)	16.9 (19)	21.8 (25)

As BS 5422:2009 Table 6  
Ambient Temperature = 25°C  
Relative Humidity = 80%

Pipe OD (mm)	Temperature of Content (degrees C)		
	10	5	0
	Minimum Class O Armaflex Thickness (mm)		
10.0	7.8 (9)	10.4 (13)	12.7 (13)
12.0	8.1 (9)	10.8 (13)	13.3 (19)
15.0	8.5 (9)	11.3 (13)	13.9 (19)
22.0	9.1 (13)	12.2 (13)	15.1 (19)
28.0	9.4 (13)	12.7 (13)	15.8 (19)
35.0	9.8 (13)	13.2 (19)	16.4 (19)
42.0	10.0 (13)	13.6 (19)	17.0 (19)
54.0	10.3 (13)	14.1 (19)	17.2 (19)
76.1	10.7 (13)	14.8 (19)	18.6 (19)
108.0	11.0 (13)	15.3 (19)	19.4 (25)

As BS 5422:2009 Table 7  
Ambient = 25°C  
Relative Humidity = 80%