

Typical performance table for 16mm OD UFH pipe spaced at 200mm centres.

Maximum floor surface temperatures

Occupied areas = 29°C

Bathrooms = 33°C

Peripheral areas = 35°C

REFLECTIVE SYSTEM

(Basis of design assumes timber joists at 400mm c/c with pipes at 200mm centres and 100mm thick Rockwool Insulation below system)

Floor Finish Resistance >>		$R = 0.00 \text{ m}^2 \text{ k/W}$	$R = 0.10 \text{ m}^2 \text{ k/W}$	$R = 0.20 \text{ m}^2 \text{ k/W}$			
Mean water temperature	Design room temperature	AFST = Average floor surface temperature					
MWT °C	TR °C	q = Heat emission (W/m ²)					
		q W/m ²	AFST °C	q W/m ²	AFST °C	q W/m ²	AFST °C
35	15	34.3	18.4	29.5	18.0	26.5	17.7
	18	28.0	20.8	23.9	20.4	21.3	20.2
	20	24.0	22.5	20.3	22.1	18.0	21.9
	22	20.0	24.1	16.8	23.8	14.9	23.6
	24	16.3	25.7	13.5	25.5	11.9	25.3
40	15	45.2	19.4	39.5	18.9	35.7	18.5
	18	38.6	21.8	33.4	21.3	30.1	21.0
	20	34.3	23.4	29.5	23.0	26.5	22.7
	22	30.1	25.0	25.7	24.6	23.0	24.4
	24	26.0	26.6	22.0	26.3	19.6	26.0
45	15	56.8	20.4	50.1	19.8	45.6	19.4
	18	49.8	22.8	43.7	22.2	39.6	21.9
	20	45.2	24.4	39.5	23.9	35.7	23.5
	22	40.8	26.0	35.4	25.5	31.9	25.2
	24	36.4	27.6	31.5	27.1	28.3	26.9
50	15	68.8	21.4	61.3	20.8	56.0	20.3
	18	61.5	23.8	54.6	23.2	49.7	22.8
	20	56.8	25.4	50.1	24.8	45.6	24.4
	22	40.8	26.0	45.8	26.4	41.6	26.1
	24	36.4	27.6	41.6	28.1	37.6	27.7
55	15	81.2	22.4	73.0	21.8	67.0	21.3
	18	73.7	24.8	66.0	24.2	60.4	23.7
	20	68.8	26.4	61.3	25.8	56.0	25.3
	22	63.9	28.0	56.8	27.4	51.8	26.9
	24	59.1	29.6	52.3	29.0	47.6	28.6

Note - Add 10W/m² for downward heat loss when using Building Regulation 2006 Compliance Document L1

	Occupied area
	Not recommended

Table 6.7 Performance table showing heat outputs to BS EN 1264 for 16mm OD PE-X or PE-RT underfloor heating pipes with reflective foil mounting in timber joisted floors.

Designers Notes

- Heat Emissions shown are for ACTIVE REFLECTIVE FOIL areas only. Deductions are not required unless some areas are not heated.
- Floor boards of 18mm thickness have been used in formulating the heat emissions shown above, for 22mm Boards deduct 6% of output.
- Systems normally operate with MLP, PEX, or PB 16mm pipe at 200mm spacing within 400mm c/c joist spaces.
- Heat outputs are sufficiently proximate for most other pipe sizes in the 16-20mm range, except for Polybutylene - deduct 5% from output.
- 100mm (minimum) Rockwool Insulation must be fitted between the joists to reduce airborne noise and downward losses.
- These systems are not recommended for use on suspended ground floors due to cold air velocity disrupting performance.

Typical performance table for 16mm OD UFH pipe spaced at 200mm centres.

Maximum floor surface temperatures

- Occupied areas = 29°C
- Bathrooms = 33°C
- Peripheral areas = 35°C

CONDUCTIVE SYSTEM

Floor Finish Resistance >>		$R = 0.00 \text{ m}^2 \text{ k/W}$	$R = 0.10 \text{ m}^2 \text{ k/W}$	$R = 0.20 \text{ m}^2 \text{ k/W}$			
Mean water temperature	Design room temperature	AFST = Average floor surface temperature					
MWT	TR	q = Heat emission (W/m^2)					
°C	°C	q	AFST	q	AFST	q	AFST
		W/m^2	°C	W/m^2	°C	W/m^2	°C
35	15	51.4	19.9	40.8	19.0	34.0	18.4
	18	43.7	22.2	34.7	21.4	28.9	20.9
	20	38.6	23.8	30.6	23.1	25.5	22.6
	22	33.4	25.3	26.5	24.7	22.1	24.3
	24	28.3	26.9	22.4	26.3	18.7	26.0
40	15	64.3	21.0	51.0	19.9	42.5	19.1
	18	56.5	23.4	44.9	22.3	37.4	21.7
	20	51.4	24.9	40.8	24.0	34.0	23.4
	22	46.3	26.5	36.7	25.6	30.6	25.1
	24	41.1	28.0	32.6	27.3	27.2	26.8
45	15	77.1	22.1	61.2	20.8	51.0	19.9
	18	69.4	24.5	55.1	23.2	45.9	22.4
	20	64.3	26.0	51.0	24.9	42.5	24.1
	22	59.1	27.6	46.9	26.5	39.1	25.8
	24	54.0	29.1	42.8	28.2	35.7	27.5
50	15	90.0	23.2	71.4	21.6	59.5	20.6
	18	82.2	25.5	65.3	24.1	54.4	23.2
	20	77.1	27.1	61.2	25.8	51.0	24.9
	22	72.0	28.7	57.1	27.4	47.6	26.6
	24	66.8	30.2	53.0	29.1	44.2	28.3
55	15	102.8	24.2	81.6	22.5	68.0	21.3
	18	95.1	26.6	75.5	25.0	62.9	23.9
	20	90.0	28.2	71.4	26.6	59.5	25.6
	22	84.8	29.7	67.3	28.3	56.1	27.3
	24	79.7	31.3	63.2	29.9	52.7	29.0

Note - Add 10W/m^2 for downward heat loss when using Building Regulation 2006 Compliance Document L1

	Occupied area
	Not recommended

Table 6.8 Performance table showing heat outputs to BS EN 1264 for 16mm OD PE-X or PE-RT underfloor heating pipes set in aluminium heat conductor plates on timber joisted floors.

Designers Notes

- 1) Heat Emissions shown are for ACTIVE HEATED ALUMINIUM areas only. Deduct joists and return bend spaces to obtain Active Area.
- 2) Active heated floor areas are normally not less than 80% of the gross area, although this may vary and designers must check carefully.
- 3) Floor boards of 22mm thickness have been used in formulating the heat emissions shown above, for 18mm Boards add 6% to output.
- 4) WIRSBO Systems operate with 20mm PE-X pipe at 300mm pipe spacing in intermediate joisted floors with joist centres of 300-600mm.
- 5) UNIPIPE Systems operate with 16mm MLC pipe at 200mm spacing thru double-groove panel within joist spaces as specified previously.
- 6) Heat outputs are sufficiently proximate for most other pipe sizes in the 16-20mm range, except for Polybutylene - deduct 5% from output.
- 7) A layer of not less than 100mm Rockwool Insulation should be fitted between the joists to reduce airborne noise and downward losses.