THERMAL INSULATION VALUES FOR CAVITIES AND REFLECTIVE FOILS

Insulation values for horizontal cavities with <u>heat flow from below</u>, such as **ceilings**.

Height in cm	GBM-GBM Black Line: $R_C = m^2.K/W$	GBM-RFPE RFPE-GBM Pink Line: $R_C = m^2.K/W$	GBM-HRF, HRF-RFPE HRF-GBM Blue Line: $R_C = m^2.K/W$	HRF-HRF HRF-Alum Alum-Alum, Alum-HRF Orange and Green Lines: $R_C = m^2.K/W$
0.1	0.035	0.04	0.04	0.04
0.5	0.11	0.2	0.2	0.2
0.7	0.13	0.27	0.28	0.28
1.0	0.15	0.38	0.39	0.4
>1.5	0.16	0.45	0.47	0.48

INSULATION VALUES FOR CAVITIES AND REFLECTIVE FOILS

Insulation values for vertical cavities, in <u>both horizontal directions</u>, such as with **walls**.

Height in cm	GBM-GBM Black Line: $R_C = m^2.K/W$	GBM-RFPE RFPE-GBM Pink Line: $R_C = m^2.K/W$	GBM-HRF, HRF-RFPE HRF-GBM Blue Line: $R_C = m^2.K/W$	HRF-HRF HRF-Alum Alum-Alum, Alum-HRF Orange and Green Lines: $R_C = m^2.K/W$
0.1	0.035	0.04	0.04	0.04
0.5	0.11	0.2	0.2	0.2
0.7	0.13	0.28	0.28	0.28
1.0	0.15	0.39	0.39	0.4
1.5	0.17	0.55	0.56	0.58
2.0	0.17	0.61	0.62	0.64
2.5	0.18	0.68	0.69	0.71
>3.0	0.19	0.68	0.69	0.71

INSULATION VALUES FOR CAVITIES AND REFLECTIVE FOILS

The same values apply for opposite heat flow

For foils with less than 95% reflectivity, a new line should be drawn between the **Black** and **Pink** lines.
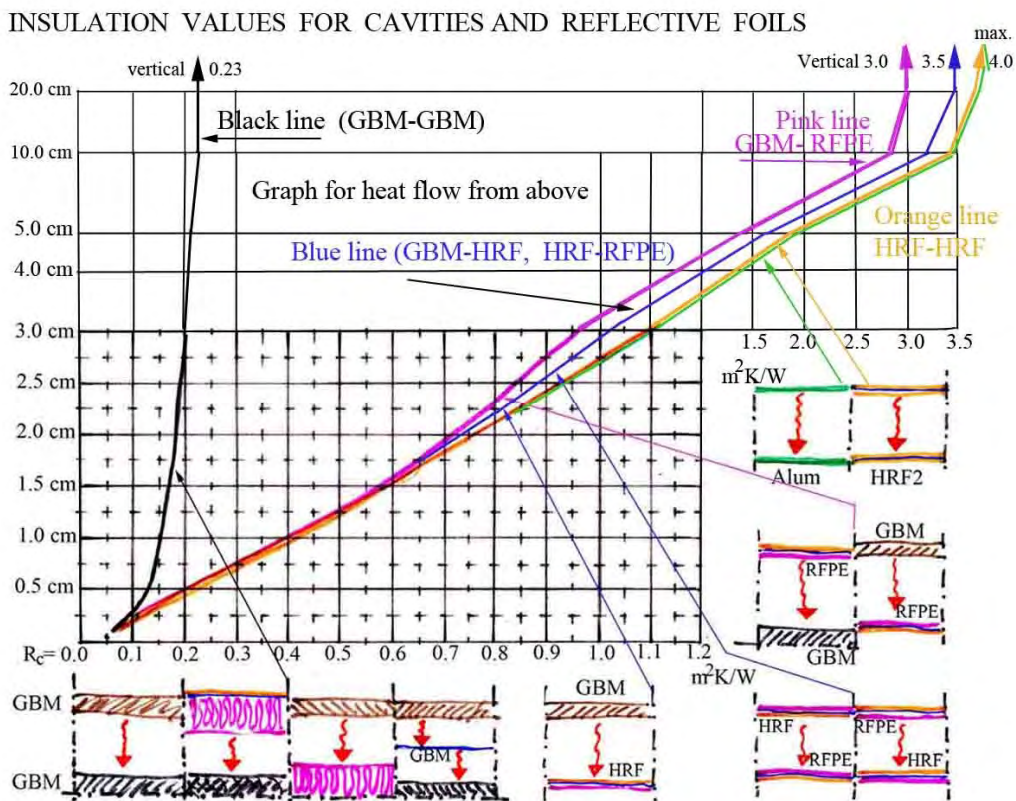
THERMAL INSULATION VALUES FOR CAVITIES AND REFLECTIVE FOILS

Insulation values for horizontal cavities with <u>heat flow from above</u>, such as **floors.**

Height in cm	GBM-GBM Black Line: $R_C = m^2.K/W$	GBM-RFPE RFPE-GBM Pink Line: $R_C = m^2.K/W$	GBM-HRF, HRF-RFPE HRF-GBM Blue Line: $R_C = m^2.K/W$	HRF-HRF HRF-Alum Alum-Alum, Alum-HRF Orange and Green Lines: $R_C = m^2.K/W$
0.1	0.035	0.04	0.04	0.04
0.5	0.11	0.2	0.2	0.2
0.7	0.13	0.28	0.28	0.28
1.0	0.15	0.39	0.39	0.4
1.5	0.17	0.55	0.56	0.58
2.0	0.18	0.72	0.74	0.76
2.5	0.185	0.86	0.88	0.92
3.0	0.19	0.96	1.02	1.1
4.0	0.20	1.15	1.2	1.45
5.0	0.21	1.5	1.6	1.7
10.0	0.21	2.8	3.2	3.5
>20.0	0.23	3.0	3.5	4.0

INSULATION VALUES FOR CAVITIES AND REFLECTIVE FOILS

The calculations are based on reflectivity (r) and emissivity (ε) of materials: $r + R_C + ε = 1$
in which the R_C is the insulation value of the foil itself (very little).

GBM   All General Building Materials (ε = 0.9; r = 10%)
HRF or HRF2   Highly Reflective Foil and 2 sided HRF (ε = 0.04, r = 95%)
RFPE   Reflective Foil with 3 mm Polyethylene foam backing (ε = 0.1, r = 90%)
Alum   Aluminium Foil, both sides (ε = 0.04, r = 95%)

When the reflectivity of the foil is less than 90%, an intermediate line can be drawn.

Pages 16 and 17 of the Technical Working Paper #3 ~ Tables for Thermal Insulation.
For more information see: www.nienhuys.info (page thermal insulation).

For foils with less than 95% reflectivity, a new line should be drawn between the **Black** and **Pink** lines.