



Duct Insulation – Thermal Performance

Two methods of duct insulation with ASTRO-SHIELD (foil/bubble/bubble/foil) have been tested for thermal performance as expressed in R-value with the following results:

Method 1:

A ¾" air space is created between the outside duct surface and the insulation using three wraps of 2" wide ASTRO-SHIELD circling the duct on 16" centers. The spacers as well as the ASTRO-SHIELD insulation are held in place with foil tape. Because of the nature of reflective insulations, humidity is not a factor in the measured thermal performance.

$\Delta T$ (°F)	U (BTU/ft <sup>2</sup> h <sup>0</sup> F)	R (ft <sup>2</sup> h <sup>0</sup> F/BTU)
25.7	0.161	6.2
30.6	0.166	6.0
40.3	0.174	5.8

Method 2:

ASTRO-SHIELD is wrapped directly to the exterior duct surface with no spacers.

$\Delta T$ (°F)	U (BTU/ft <sup>2</sup> h <sup>0</sup> F)	R (ft <sup>2</sup> h <sup>0</sup> F/BTU)
21.4	0.215	4.7
26.8	0.210	4.8
31.6	0.247	4.1
39.6	0.251	4.0
46.5	0.260	3.9

ASTM methodology that tests a reflective insulation for R-value generally understates the actual thermal performance of the installed system. Therefore it is likely that ASTRO-SHIELD will perform somewhat better than the measured R-values would indicate, but for purposes of load calculations the above numbers should be used.