RIMA International
### Reflective Insulation Manufacturers Association International

ENCLOSED
AIR-SPACES AND AIR FILMS

The difference between enclosed air spaces and air films is illustrated in the following figure showing side views of a wall. The diagram on the left shows an enclosed region inside the wall (a wall cavity) that has six sides that prevent air from moving in or out of the enclosure. Heat moves across the enclosed region. The diagram on the right shows heat moving from the surface of the wall to the air outside the wall. In both cases heat moves from a hot region to a cold region. In both cases there is a resistance (R-value) that limits the flow of heat.

Enclosed Air Space   Surface Air Film
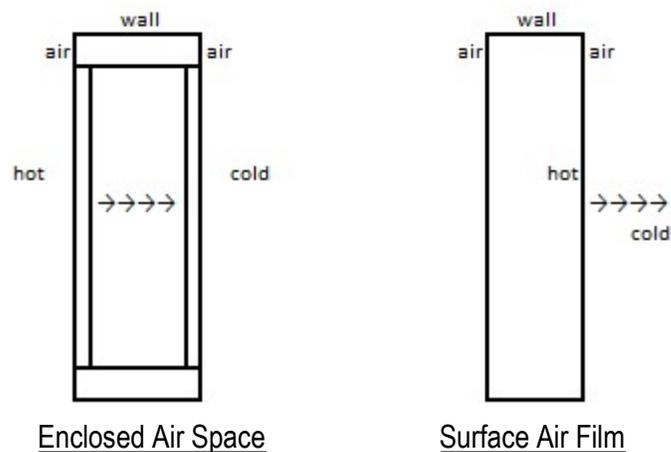
If the enclosed air space has a low-emittance (reflective) surface perpendicular to the indicated heat-flow direction, then the term "enclosed reflective air space" or reflective insulation assembly applies. The enclosed reflective air space has a thermal resistance (R-value) that can be determined by standard methods. The heat flow for the diagram on the right is across a layer of air called an "air film". The rate of heat flow and the thermal resistance depends on the emittance of the wall and velocity of air moving parallel to the surface.

The thermal resistance of the enclosed air space depends on conditions in the cavity that is inside the wall while the thermal resistance of the air film depends on conditions outside the wall.

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