

K-FLEX DUCT® LINER GRAY ACCEPTABLE AIR FLOW RATE IN A PLENUM

K-Flex USA elastomeric sheet / roll products have been tested per UL 181, section 17 (Air Erosion). In this four (4) hour test, air is passed at a stated velocity through the insulated fixture. Test result: K-Flex USA sheet products were tested at 2,500, 4,000 and 10,000 feet per minute. There were no signs of erosion, cracking or delamination.

K-Flex Duct® Liner Gray has been successfully tested at 10,000 feet per minute both with and without mechanical attachment. Based on ASTM C1071, section 12.7, K-Flex Duct® Liner Gray is *rated* to 4,000 fpm (10,000 / 2.5).

An example of a typical duct is shown below. If the duct had an air velocity of 25,000 ft³ min., it must be converted to a velocity measured in feet per minute to determine if the product tested would be appropriate for the application. The velocity must be less than the UL 181 tested velocity. This is accomplished by dividing the volume of air by the cross-sectional area of the duct. Note that the insulation thickness reduces the cross-sectional area and should be taken into account when performing the calculations.

In the simplified example below, the cross-sectional area of the duct is 15 ft². Dividing the volume of air (25,000 ft³ / min) by the cross-sectional area (15 ft²) results in a velocity of (1,667 ft / min). Therefore, K-Flex USA elastomeric sheet insulation or K-Flex Duct® Liner Gray would be appropriate for a duct of this size with an anticipated airflow of 25,000 ft³/min.

Duct Cross-Sectional Area Calculations

Area (Square/Rectangular Duct) = width x height
as measured from the liner surface

Area (Circular Duct) = $\pi r^2 = 0.7854 \times \text{diameter} \times \text{diameter}$
where diameter = duct ID minus 2X insulation thickness

$$\text{Area} = 3\text{ft} \times 5\text{ft} = 15\text{ft}^2$$

