Division of Accessible Products Company
2122 W. 5th Place
Tempe, AZ 85281
Phone: 480-967-8888 Fax: 480-894-6255
www.techlite.net

Mitered Fitting Length Calculation

When insulating elbows in a pipe run, it is sometimes desired to miter cut standard pipe insulation rather than use diaper inserts or if preformed insulation inserts are unavailable. To estimate the length of pipe insulation required to insulate an elbow, follow these simple guidelines.

First define the variables involved:

$L =$ Pipe length to insulate fitting [inch]
$d =$ Pipe outside diameter [inch]
$t =$ Insulation thickness [inch]

There are two standard elbows commercially available: short radius (standard) and long radius. The formulae for calculating the required pipe length per fitting are given below.

Short Radius 90° Elbow:

$$L = \left[(1.5d + t)\cdot(1.571)\right] + 4$$

Long Radius 90° Elbow:

$$L = \left[(2d + t)\cdot(1.571)\right] + 4$$

Short Radius 45° Elbow:

$$L = \left[(1.5d + t)\cdot(0.786)\right] + 4$$

Long Radius 45° Elbow:

$$L = \left[(2d + t)\cdot(0.786)\right] + 4$$

Example 1. If you want to estimate the length of pipe insulation used to insulate a 6” IPS 90° *short* radius elbow with 3” of insulation:

$d =$ 6.625”
$t =$ 3”

$$L = \left[(1.5(6.625'') + 3'')\cdot(1.571)\right] + 4''$$
$$L = 24.33''$$

It will take approximately 24.33” of pipe insulation to insulate each fitting of the given size.

Example 2. If you want to estimate the length of pipe insulation used to insulate a 6” IPS 90° *long* radius elbow with 3” of insulation:

$d =$ 6.625”
$t =$ 3”

$$L = \left[(2(6.625'') + 3'')\cdot(1.571)\right] + 4''$$
$$L = 29.53''$$

It will take approximately 29.53” of pipe insulation to insulate each fitting of the given size.

R. Henry
12/17/2010