Thermal Expansion/Contraction Worksheet

This worksheet is designed to aid in determining what expansion and contraction your King Plastic HDPE product part will experience.

EXPANSION
In Box A = write the approximate temp. at the time of fabrication.  
In Box B = write the highest temp. your part will experience in its place of service.

Subtract Box B from Box A to get the temp. difference for expansion due to heat.  
(i.e. 70ºF – 100ºF = -30ºF)

Box A °F — Box B °F = _______ = D (Expansion)

CONTRACTION
In Box A = write the approximate temp. at the time of fabrication.  
In Box B = write the lowest temp. your part will experience in its place of service.

Subtract Box B from Box A to get the temp. difference for shrinkage due to cold. i.e.  
(70ºF – 30ºF = 40ºF)

Box A °F — Box B °F = _______ = D (Contraction)

Let's call the temp. difference “D”

To calculate the amount your part will expand and contract, multiply the following:

\[
D \times \frac{L \text{ or } W}{	ext{in inches of part}} \times 0.00006 = \text{Expansion or Contraction}
\]

Expansion Example: If a sheet of HDPE was being cut in a shop at 70ºF and the highest temp. the part will experience is 100ºF, the temp. difference (D) is 30. The part is 96 inches, so expansion is:

\[
30ºF \times \frac{96”}{\text{length of part}} \times 0.00006 = 0.173 \text{ or approximately 3/16”}
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