

Thermal Expansion/Contraction Work Sheet

This work sheet is designed to aid you in determining what expansion and contraction your King StarBoard® part will experience.

CONTRACTION

A = _____ °F. What is the approximate temperature at the time of fabrication?

B = _____ °F. What is the lowest temperature you part will experience in the place of services?

Subtract B from A.

This gives you the temperature difference for shrinkage due to cold.

EXPANSION

A = _____ °F. What is the approximate temperature at the time of fabrication?

B = _____ °F. What is the highest temperature you part will experience in the place of services?

Subtract B from A.

This gives you the temperature difference for expansion due to heat.

Let's call the difference "D" = _____ °F.

To calculate the amount you part will expand or contract, multiply the following:

$$\frac{\text{D } ^\circ\text{F}}{\text{D} = \text{temp. difference expansion}} \times \frac{\text{L or W inches}}{\text{L or W} = \text{Length or Width of part}} \times \frac{.00006}{\text{.00006} = \text{coefficient of King StarBoard}} = \frac{\text{E or C inches}}{\text{E or C} = \text{amount of expansion or contraction}}$$

Example: If a King StarBoard® sheet was being cut in a shop at 70° F and the highest temperature the part will experience is 100° F, the Temperature Difference (D) is 30.

The part is 96 inches, so the expansion is"

$$\begin{array}{ccccccc} 30^\circ \text{ F} & \times & 96'' & \times & .00006 & = & .173 \text{ or approximately } 3/16'' \\ \text{(temp difference)} & & \text{(length of part)} & & \text{(coefficient)} & & \text{(expansion)} \end{array}$$