

# 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:

$$\begin{array}{ccccccc} \frac{D}{\text{D = temp. difference}} \text{ °F} & \times & \frac{L \text{ or } W \text{ inches}}{L \text{ or } W = \text{Length or Width of part}} & \times & \frac{.00006}{.00006 = \text{coefficient of King StarBoard}} & = & \frac{E \text{ or } C \text{ inches}}{E \text{ or } C = \text{amount of expansion or contraction}} \end{array}$$

**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"

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