

TECH NOTE

ISO 9001:2008
ISO 14001

EFFECTS OF THERMAL EXPANSION & CONTRACTION ON MACHINING / WORKING WITH UHMW-PE

UHMW-PE is an excellent wear material. But it is affected by temperature fluctuations, which must be considered when cutting and machining to size.

The best procedure is to cut UHMW-PE at a temperature of 75°F. If you must consider actual operating temperature, here is a working formula to help you to accommodate for thermal effect:

$$\begin{array}{c} \text{Variation of degrees (°F)} \\ \text{between installation and} \\ \text{max. operating temp.} \end{array} \times \begin{array}{c} \text{Length of piece} \\ \text{(inches)} \end{array} \times \begin{array}{c} 0.000078(\text{in.}) \\ \text{If temp. } > 85^\circ\text{F} \\ \\ 0.0001(\text{in.}) \\ \text{If temp. } < 85^\circ\text{F} \end{array}$$

Examples:

A) Expansion Example:

Installing at 78°F ; the maximum operating temperature will reach 150°F ;
piece is 120" long
 $150^\circ\text{F} - 78^\circ\text{F} = 72^\circ\text{F}$ of temperature change
 $72 \times 120 \times .0001 = 0.864''$ of expansion

B) Contraction Example:

Installing at 78°F ; the lowest operating temperature could reach -200°F ;
piece is 120" long
 $78^\circ\text{F} + 20^\circ\text{F} = 98^\circ\text{F}$ of temperature change
 $98 \times 120 \times .000078 = 0.917''$ of contraction

Follow these simple guidelines - it will make your life much easier !

Contact Robco for additional technical information at info@robco.com Thank you !

Your Robco Technical Team