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## **Skiving & You**

*PE foams* are typically manufactured in sheets or blocks which may not be perfectly flat due to the expansion process used to create the foam. Even when removing the outer “skins”, whatever high or low spots were on the foam will remain.

*Elastomeric foams* are made from a blend of various polymers and can present some unique challenges. They are flexible and deformable which can make it more difficult to maintain consistent thickness during skiving. Some elastomers have a higher coefficient of friction which can affect how they interact with the cutting blade and lead to variations in thickness.

Our equipment is very accurate, and our processes help ensure this accuracy. However, it is important to note that the final thickness tolerances are not solely a function of the machine performance but are also influenced by the unique characteristics of the material. If strict tolerances are necessary for your application, contact us for available solutions.

### **Terminology:**

**Splitting:** Progressive horizontal cutting of the material in half to reach the required dimension

**Skiving:** The process of cutting a thin sheet from a thicker block or bun

**Skin:** Outer layer or surface of foam formed during manufacturing that is typically denser

**Looping:** The process of making continuous rolls out of buns that have been seamed together to create a loop. This is done on vacuum table skivers designed for this process.

**Leveling:** The process of leveling out the thickness variation within a sheet.

### **Temperature Factors:**

Changes in temperature can have pronounced effects on thermoplastics. Exposure to heat induces expansion in these materials, while cooling prompts contraction. Additionally, a notable change occurs in their physical properties, with an increase in temperature making the foam softer, and a decrease causing it to stiffen.

### **Types of skiving:**

**Roller Splitting/Skiving:** The material is compressed between two rollers to push it through a fixed ultra sharp knife edged blade. Thickness is controlled by the relative distance of the rollers from the blade and the amount of compression required to push the foam through the blade.



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Characteristics

1. Cuts with compression
2. Faster for large quantity jobs
3. Can cut denser foams.

Drawbacks and Limitations:

1. Wider tolerances
2. Thickness variations within a sheet
3. Variations in sheet to sheet thickness

**Vacuum Table Skiving / Looping:** Material is held flat to a table using air suction, and the table is passed through an ultra-sharp knife edged blade. Thickness is controlled by the relative distance of the blade from the table. The first pass(s) will level the material. The table will continue moving, with the blade dropping a defined thickness each time until done.

Characteristics

1. Material is not compressed.
2. Levels the blocks.
3. Each block is processed individually.

Drawbacks and Limitations

1. Lower yields due to block leveling.
2. Maximum density of 4 lb. in most instances
3. Limited to cutting 1" thick maximum

**Skiving Tolerances**

While there are ASTM standards that address skiving tolerances, most notably D4819, Standard Specification for Flexible Cellular Materials Made from Polyolefin Plastics. **Worldwide Foam has chosen to define its own standard tolerances that are tighter than those in the ASTM.** Tolerances requested that are tighter than the below will need to be custom quoted.

**Roller Splitter/Skiver Tolerances**

Thickness in Inches	Tolerance in Inches
.125 - .3125	+/- .03125
.32 - .875	+/- 10% of thickness
.88 - 2	+/- .094
Greater than 2"	+/- .125
2" single stage designated with the R code	1.94 +/- .06 (2" max)



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**Vacuum Table - PE Tolerances**

<b>Thickness in Inches</b>	<b>Tolerance in Inches</b>
.079 - .75	+/- .03125
.76 - 1	+/- .0625

Note: Vacuum Table is limited to 4lb density and below and 1” maximum in most circumstances. Leveling process has a standard tolerance but consistent thickness sheet to sheet, and within a sheet.

**Vacuum Table – Elastomeric Tolerances**

<b>Thickness in Inches</b>	<b>Tolerance in Inches</b>
<0.09375”	+.03”/-.015”
>0.09375”-.3125”	+/- .03”
>0.3125”-0.5”	+/- .045”
>0.5”-0.75	+/- .06”
>.75”-0.875”	+/-0.075”
>0.875”-1”	+/- .09”
>1”-1.25”	+/-0.125”
>1.25”-1.5”	+/-0.15”
>1.5”-2”	+/-0.18”