One-stage Foams VS Two-stage Foams

- Difference in the manufacturing process.

They are made by different processes. One-stage production uses only one set of molds and is considerably faster. Two-stage, as the name implies uses two sets of molds to manufacture the finished product.

- Difference in the foams.

Within the same density, two-stage foams typically come out with a smoother surface, less pinholes, and slightly better physical characteristics. One-stage tend to be heavier, have a coarser surface and slightly poorer overall performance.

- Is two-stage foam better?

In many ways, yes, but one-stage can be more consistent. Due to its thickness two-stage foam can be softer and lighter in the middle than the foam near the top and bottom. This is true for all manufacturers.

- How do I know which one I am buying?

On all our new literature, they are marked with the "R" designation in our product codes. This will indicate that the foam is a one-stage product instead of a two-stage.

- When are they used?

Only two-stage foam is available up to 4lb densities. In 6lb foam and greater, either can be used depending on the customers application and manufacturing process. We can provide specifications and samples of each and we recommend that each customer determine for themselves which one is right for them.

- What is the manufacturing process?

Almost every XLPE foam plant in the world uses the same process. Raw materials such as PE resin, blowing agents, cross-linking agents, as well as others are mixed together thoroughly into a consistent mixture. This mix is then placed in metal molds, and when the presses are closed, it will expand with the heat to transform into XLPE foam.

In the one-stage (also referred to as one-step) process, the foam is expanded in the mold just once. It comes out of the mold and expands further in the air until it reaches its final size. Once it has cooled, it is ready to ship. In the two -stage (or two-step) process, the materials are foamed twice, the first time is identical to one-stage foam, and then the foam is expanded a second time in a second, different set of molds. The 2nd stage in this process is much slower and mold costs are much higher than in first stage molds as they need to be heated and cooled without opening the molds.

- How much slower is the two-stage production?

A two-stage production line normally takes 3 times as long to produce one bun. Typically this process utilizes three or four sets of second-stage molds for every one set of first-stage molds.

- Why is the one-stage foam typically heavier?

Due to the simplicity of the one-stage process a wider array of resins are available to be used, and in order to increase hardness of the one-stage foams it is less expensive to add low cost resins thereby, increasing the density of the foam.

- How thick can the buns be made in the one-stage process?

The maximum thickness is 3" for the one-stage foams.

- How thick can the buns be made in the two-stage process?

Currently the maximum thickness is 6". The larger thickness presents a host of issues, notably the consistency at the center of the bun versus the edges. It is much more difficult to make, and many of the skivers in operation cannot handle buns this thick. As technology and equipment improve it remains a possibility in the future.