SPFA gets calls regularly from customers, designers, architects and others looking for straight answers to their questions on SPF. Here is a question received recently that our panel of experts addressed:

**Why does SPFA specify that the foam in sprayfoam roofing be applied at full thickness the same day?**

**Figure 1:** Note the darkened, UV exposed skin on the first pass of SPF in this modified core sample. The layers of foam separated easily and were the cause of extensive blistering on this particular roof.

**Figure 2:** Improper phasing caused this sprayfoam roof to blister.

Within the roofing community, applying multiple layers of roofing at different times is termed **phased construction** or **phased application**. The term is usually applied to any delay in the installation of the top felts of built-up roofing.

Specific to SPF roofing, phased construction or phased application refers to any delay of application of subsequent passes of spray foam.

The advantage of phased application is that it offers convenience to the roofer: An initial application can serve as a temporary roof which can be installed quickly to “dry in” the building. This applies to new construction, re-roofing tear-offs and re-covers.

But the disadvantages far outweigh the advantages.

Fundamentally, new spray foam does not stick very well to old spray foam. In addition contaminants such as moisture, pollen, dirt, dust, etc. are likely to build-up on the foam surface over a few days. Consequently, even spray foam that is one or two days old will suffer loss of adhesion. In roofing applications, this can be critical.

SPF has limited resistance to UV (ultra-violet) radiation. The first symptom of UV exposure manifests itself as a discoloration. But more subtle effects are occurring as well: the SPF surface tends to harden, forming a slick surface and become less accepting of new spray foam. If left overnight, the SPF surface may also accumulate moisture from dew or precipitation as well as contaminants such as dust, pollen, oils, etc. All of these factors detract from the adhesion of subsequent spray foam (or coatings).

Experience shows that the most common cause of blistering on a spray foam roof is due to delayed application of subsequent layers of spray foam. This can be easily identified by taking a core or modified core sample and examining the SPF profile. A phased application will be revealed by a dark or orange layer of skin between the layers. When pulling apart the layers in the sample, the layers will readily separate.

To avoid these problems, SPFA guidelines and specifications implore that the full SPF thickness be applied the same day. The guidelines go one step further, stating that the full thickness of SPF and basecoat be applied the same day as coating adhesion is similarly adversely affected by SPF aging.

This does not mean that every spray foam roof must be installed in one day. It means that the roof sections that are started each day, be sprayed to full thickness and base coated the same day. For example, let’s day an SPF roofing contractor is recovering a 10,000 ft² roof and anticipates it will take three days to apply foam and basecoat; a third of this roof should be sprayed to full thickness and base coated on each day. Areas where new foam will be applied to old foam are limited to the day-to-day tie-ins (and these tie-in areas will require special treatment to assure good adhesion).

Nor does this mean that the full thickness of spray foam be applied in one pass (but generally speaking, the fewer passes, the better). SPF manufacturers limit the thickness of roofing foam that can be applied in a single pass. The minimum pass thickness is typically ½-inch while the maximum is formulation dependent and is usually around 2 inches (check with the manufacturer for the limits on the specific SPF product you are using).

Plan and schedule your roof projects to: Always spray the full thickness of SPF and apply the base coat on the same day. You will improve the quality and performance of your SPF roofs.