# Removable Foam Liners: A Sticky Situation

*By Steve Hill, BOCO, CO*

In manufacturing orthoses, we frequently line them with foam. The most common reason is patient comfort. But there are others. For instance, foam reduces friction points and protects insensate diabetic feet.

Another, less common reason is to compensate for the edema brought about by any number of conditions. In this situation, foam liners can be used as a removable boot, taken out when swelling is greatest and replaced when swelling has subsided.

Of course, the most common use for removable foam is in fabricating a replaceable soft foot bed. CROW boots usually use this application of the removable foam UCB. The orthotist can simply discard the old, filthy and compacted UCB and replace it with a fresh one, fabricated with the initial orthosis.

## So foam doesn't stick

Under normal fabrication conditions, foam wants to stick to the plastic that is vacuum-formed around it. Both materials are made with essentially the same type of plastic and both become very sticky and bond to themselves readily. That trait is a big advantage for thermoforming in general, but makes fabricating removable foam very difficult indeed.

There are several ways to make foam part from the plastic formed over it. One tried and true way is to coat the area of foam with liquid soap, which acts as a parting agent. Nothing wants to stick to foam coated with liquid soap.

The disadvantage of this method is that it's very messy and cleanup is a real bear. The soap runs all over the cast under the heat and pressure of thermoforming, so everything must be washed in warm water. We did it this way for a while, but we were losing valuable fabrication time. We knew there had to be a better way.

A method we discovered here at the OTS Central Fab makes this process much easier, but it requires the use of an industrial release agent made by Miller-Stephenson. This spray is so cool that it doesn't even have a name, just an alphanumeric designation: MS-136W.

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You know a product is serious when the name is just a bunch of letters and numbers—like WD-40 or AK-47. The description on the label says "PTFE release agent, water base, for hot molds." Since it's water based, it's relatively safe and environmentally friendly.

## The technique

As an example, let's consider a CROW boot. First, pull and shape your foam insert. Be sure to perforate it well so that you can achieve vacuum through it.

Pull one layer of stocking over the cast and apply the removable insert to it. If it doesn't want to stay on the mold, glue it in place with just a trace of contact cement around the edges.

Next, spray the insert with MS-136W and pull two to three stockings over the foam and cast. Make sure the knot in the end of the stocking is out of the way of the plastic pull. CROW boots typically require another layer of foam between the insert and the plastic, but pull the rest of the brace with whatever else your patient may require.

After vacuum is achieved and the plastic is removed from the mold, the insert should just fall right out. If you're still having issues with the insert sticking to the inside surface, add another stocking. This will increase the barrier between each sticky side and ensure release.

When using this new release agent, we haven't had to clean up any residue, even if we intend to glue the liner back in place. O&P

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