

# SMP Bladders

## Advanced Tooling Solutions

Shape Memory Polymer bladders are an advanced composite tooling solution. They operate as mandrels and later as inflatable bladders. First providing a rigid, durable surface for composite lay-up, SMP bladders then transition to provide flexibility and inflatability against the interior of the final mold during cure.

# SMPbladders overview

## SMP Bladders 275

- 144°F to 275°F cure temp
- 144°F transition temp
- 80% elongation

## SMP Bladders 350

- 217°F to 350°F cure temp
- 217°F transition temp
- 40% elongation

## Benefits

- Cost reduction
- Easily extracted
- Reduced cycle time
- No disposal issues
- No EPA restrictions
- Usable in conventional manufacturing lines
- High-quality parts
- Accurate parts
- Consistent production

## Features

- Reusable
- Tailorable transition temperatures
- Flexibility of design
- Made with Veriflex® SMP

Shape Memory Polymer Bladders  
operate first as **mandrels** and then  
as **inflatable bladders** during cure.

### FORM

A rigid SMP bladder is molded into near-net shape and mold released.



### LAY-UP

The rigid SMP bladder is first used as a mandrel for composite lay-up.



### CURE PREP

The composite lay-up on the SMP bladder is inserted into a clamshell mold.



### CURE

The composite part is cured above the bladder's transition temperature. Pressure is applied to the bladder, inflating it against the interior of the composite.



### EXTRACT

When fully cured, the flexible SMP bladder is depressurized and contracts for easy removal.



For More Information:

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