Improving Pams Mandrel Quality by Increasing the Interfacial Surface Tension of the Emulsion

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Poly Alpha Methyl Styrene (PAMS) mandrels are used in the fabrication of a large variety of targets for the ICF program. The process to make these PAMS mandrels has already been developed into production. Like all processes there is always room for improvement, especially in the quality of the target. Improvements were made for PAMS mandrels in the size range of (700–1000 μm, by increasing the interfacial surface tension in the outer water solution (W2) in the PAMS emulsion. We achieved this by changing the concentration of Poly Vinyl Alcohol (PVA) from 0.3% to 1.0% and adding a small amount of 0.1% Poly Acrylic Acid (PAA). Increased interfacial surface tension of the W2 solution resulted in improved out of round (OOR) and non-concentricity (NC) of the mandrels. These improvements give us a higher yield of batches of shells that meet the PAMS target quality specifications compared to the old PAMS production process.

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