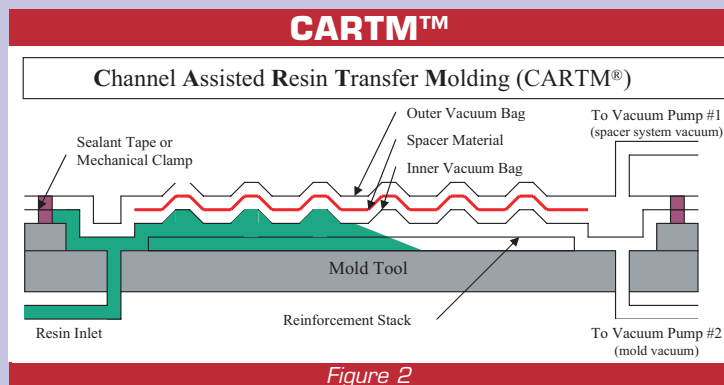
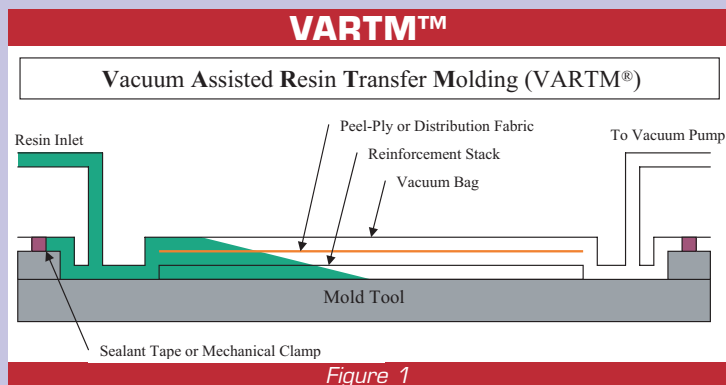


THERMAVAC® XRT

VACUUM BAGGING MATERIAL

CHEMICALLY RESISTANT AND REUSABLE

Composite fabrication with aggressive resins, such as epoxy and vinyl ester, requires careful design and construction of vacuum bag tooling. Thermavac® XRT vacuum bagging laminate is the right solution for building reusable bags for extreme resin transfer applications.



It is standard practice to use a pure silicone rubber vacuum bag for resin transfer molding because silicone has excellent thermal stability, flexibility, conformability and release properties. However, in spite of these positive characteristics, aggressive resins can absorb into the silicone polymer matrix in the uncured state and, upon curing, the vacuum bag material can become brittle. Furthermore, this process results in premature cracking and flaking of the bag material and, subsequently, poor release characteristics, reduction in tear strength and loss of transparency. Ultimately, bag failure eventually occurs in the form of vacuum leaks or adhesion to the cured resin, which in turn leads to excess disposal of warped materials and inevitably requires a more viable and cost-effective alternative.

The purpose of this application note is to introduce Arlon's Thermavac® XRT reusable vacuum bag laminate material as a beneficial alternative to

the typically used components. In addition, we present the results of a study conducted at Arlon comparing the pure silicone bag material to Thermavac® XRT laminate.

Arlon's Thermavac® XRT laminate offers a design solution to the fundamental problems with pure silicone bag material. Thermavac® XRT vacuum bag material is a composite of silicone rubber with a resin resistant film chemically bonded on one side. The film side used in direct contact with resin effectively protects the silicone rubber from chemical degradation. The silicone rubber side improves handleability, strength at elevated temperatures and yields a creep-free, thermally stable seaming method for large applications. The composite construction gives long cycle life and excellent release characteristics for resin transfer molding to 154°C (310°F).

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Arlon's Thermovac® XRT Vacuum Bagging Material offers the following benefits:

- Reusability in applications where only disposable nylon or polyester bags could be used previously, but offering substantial savings in repetitive bag assembly
- Chemically resistant to epoxies, BMI, vinyl esters, and others to permit extended reusability over pure silicone rubber
- Translucent for easy visual inspection during the molding process
- Seamable to form larger bag constructions for process flexibility
- Stable for cure temperatures up to 154°C



Figure 3 - Thermovac XRT laminate with robust seam

Arlon performed a side-by-side comparison of Thermovac® XRT laminate versus a pure silicone bag material utilizing an aggressive epoxy resin. After 50 cycles at 110°C, Thermovac® XRT laminate showed no significant degradation of release properties or transparency. When the testing was performed on the pure silicone bag, the material began to cloud after only one cycle, cured resin began to adhere after 15 cycles, and catastrophic failure occurred in the form of

material rips and tears during the resin removal at 18 cycles.

Arlon's Thermovac® XRT laminate is available in widths to 48 inches and continuous roll lengths to 250 yards. Seaming is accomplished with seaming tape and barrier tape used on opposite sides of the laminate material to produce a strong, robust and chemically resistant seam (see Figure 3).

For additional information visit www.Arlon-STD.com
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