IMPACT
COMPOSITE TECHNOLOGY, LTD.

RF Fiber and Vapor Suppressant Factor

RF Fiber is a "reinforcing "natural fiber additive and is not an *inert "filler"*. Fillers lower emissions only by virtue of simply diluting the styrene containing resin with other materials.

This is not the case with RF Fiber. When RF Fiber is added to the polyester resin the following events occur. Styrene monomer is drawn into the fiber structure, which has a high oil absorption rate (2.2 to 2.8 kg oil per kg of fiber), while the lignin monomers are being extracted by the polyester resin. Then when the catalyst initiates the free radical reactions that lead to the final cross-linked structure, the lignin is available to participate. Because the lignin fractions have longer chains than the ethylene groups of the styrene cross links, a more flexible (tougher) cross-linked structure is formed. This tougher structure with the chemical bonding produced with the RF Fiber, provides a new structure in the cured resin that helps stop brittle crack propagation and premature composite failure.

Previously all suppressants were wax based and RF Fiber is new type of suppressant. The MACT WWW has several references for vapor suppressants in the discussions contained in the text, the listed definition No.3.1 states "Vapor suppressant, an additive that inhibits the evaporation of volatile components in unsaturated polyester or vinyl ester resins." RF Fiber clearly does this by absorbing the styrene, crosslinking it to the laminate to seal in the styrene and reduce styrene emissions, while improving physical properties.

Impact Composites Technology's lab performs a Certification report with based on client's resin and the formulations used in production. The Certification test uses the CFA Vapor Suppression Test (VSR Test) as outlined in Appendix A of 40 CFR WWWW National Emissions Standards for Hazardous Air Pollutants: Reinforced Plastic Composites. The purpose of the test is to compute the VSE Factor to be used in the calculations under the United Emission Factor (UEF) model when the Impact RF Fiber is used as a vapor suppressant. The VSR test itself is not intended to quantify overall volatile emissions from a resin, nor is it intended to be used as a stand-alone test for emissions determination.