Background
SMC is ready to mold fiber reinforced thermoset polymer primarily used in compression molding. This is manufactured by dispersing long strands (usually >1") chopped fibers in random orientation, commonly glass fibers (GF) and carbon fibers (CF) on thermoset resin (Typically polyester, vinyl ester, and epoxy). SMC’s are used as an alternative for metals and thermoplastics. The goal for the creation of SMC is to reduce the weight and enhance the mechanical properties of a given component.

Research Objectives
1. To find the best combination of resin and fiber for SMC compression molded parts
2. Optimize the processing parameters of SMC for better properties and economical material.

Creating SMC Plates
The processed SMC mat are cut into small sections 4.5x4.5 inches. Two or more layers( depending upon how thick plate is required) of lamina’s are placed at one particular direction in 6x6 inches tool and compressed it for 150 seconds at 180°C.

Once the plate is fabricated (Figure 3: Left), along(with reference to conveyor side) side is marked. Samples are taken from the plates according to ASTM standards (Figure 3: Right).

Testing SMC Plates
Preliminary technique, such as Scanning Electron Microscopy (SEM) of the plate to check the porosity and wettability of the fibers. Mechanical characterization such as Flexural test and Inter laminar shear strength (ILSS) are tests using ASTM standards D790 and D2344 respectively in Test resources frame located at FCMF, UTK.

Results and Conclusion
The SMC plates containing Fiber Glass and Polyester were tested, showing promising results for this combination of SMC compression molding materials.

Future Testing
The Polyester-Fiber Glass SMC shows promising results, but further testing’s need to be carried out to justify the orientation of fibers. Processing parameters can be changed to get better results.

Research Need
As SMC has been used for some time, improvements have been looked to make it a more economical option, quicker to produce and to get Isotropic properties. Development in this field could change the way modern amenities are created, and improve already developed fields. The determination of the fibers with resin with an addition to additives such as fillers, thickener, and catalyst has been a continuous research process.