Ashley Industrial Molding

"AIM" for Excellence

SHEET MOLDING COMPOUND（SMC）

Sheet molding compound (SMC) or sheet molding composite is a ready-to-mold glass fiber-reinforced polyester or vinlyester material primarily used in compression molding. Sheets are provided in rolls and then manually cut into charge patterns before being placed in the press.

SMC can refer to a process and a reinforced composite material. The material is produced by releasing long strands (more than 1") of chopped glass fibers onto a layer of usually polyester resin. Since SMC uses longer glass fibers than other processes, it produces a stronger finished product. SMC is often used in complex applications, to provide corrosion resistance, and for structural parts in low cost, high volume programs.

Process

A doctor box (also known as a paste reservoir) places an exact amount of the needed resin paste onto plastic carrier film (similar to plastic wrap). The carrier film then passes under a chopper which releases glass fiber, broken up from long strands. Before another sheet of carrier film is added on top, the glass fibers get another layer of resin to hold all the fibers together.

The two sheets of carrier film are then pressed further onto each other, forming them into one solid piece. They are then placed on a take-up roll while the material matures, which occurs in an oven-type controlled area for at least 48 hours. It is then placed into a cooling area. Once reaching the cooling area, it must be used within 30 days.

Once taken to the press for use, the carrier film is removed and the material made from the glass and resin is cut into charges. The shape of the component required determines the shape of the charge. That charge is then laid on a steel die, which is heated, and pressure is applied by a hydraulic press. Once fully cured, the charge is removed from the mold as the finished product.

Advantages

SMC is advantageous due to its high volume production capacity and its ability to reproduce parts accurately. It also requires low labor and reduces industry scrap markedly, making it cost effective. The specific gravity of SMC is 1.9, a large weight reduction from thin-gauge sheet metal, which has a specific gravity around 7. SMC also allows the consolidation of many parts into one. The level of flexibility and the ability to incorporate geometric styling features also exceeds many counterpart processes.