In-Mould Coating

New Surface Treatments for SMC Parts

A range of powder coatings with new effects and properties is available for coating SMCs.

Adapta Color has launched a new range of powder coatings for use with SMCs (sheet moulding compounds). It includes a wide variety of colours, new metallic effects and special functional properties, opening up new applications for powder coated SMCs, which can be produced using the process referred to as PiMC (powder in-mould coating). The metallising system used by Adapta Color (the Adapta bonding system) allows innovative surface finishes, such as imitation stainless steel, to be applied to SMC products. Intelligent powders are currently under development which will allow the functions of the Adapta Color smart coating range to be transferred to the PiMC technology.

The newly developed coatings allow SMC parts to be moulded and coated in one operation (PiMC) which leads to considerable cost savings. In addition, powder coatings have been developed for SMCs which have excellent weather resistant properties and, therefore, avoid the damage caused by chalking. The Adapta Color research laboratory has an industrial press and a variety of moulds for the purpose of developing these products. The pressing speed, the temperature of the upper and lower parts of the mould and the closing, opening and dwell times can be adjusted, which enables products to be produced that meet individual customers' requirements.

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SMCs – Manufacturing process, benefits and applications

SMCs are fibre reinforced plastics (FRPs) made from heat-curing resin, a fibre reinforcement and a filling compound which are moulded with the help of additives that determine the final properties of the moulded component.
SMCs use fibres that are cut to size on site. The fibres are placed between two layers of the heat-curing system (which consists of the resin, catalyst, filling compound and additives). The pre-impregnated material passes through a compression system which ensures that the fibres are fully impregnated. After this the SMCs are coated and rolled out and then stored while they mature, until they are thick and viscous enough for moulding.
SMCs are normally compression moulded. The SMC sheet is cut to size, placed in a mould and heated to a temperature between 130 °C and 150 °C. The pressure ranges from 50 to 100 bar and the dwell time in the press is between 25 and 180 seconds, depending on the reactivity and thickness of the material and the size of the part.
Progress has recently been made on replacing fibre glass with natural fibres such as linen, jute and hemp.
The main applications for SMCs include electric components with a low surface resistance, vehicle components, internal fixtures for buses and trains, sanitary fittings and water tanks. The main benefits of the material are its high strength, light weight, heat and fire resistance, electrical insulating properties, water resistance, low emissions and the possibility of manufacturing complex shapes to tight tolerances.

Spraying the powder into the SMC mould. New coatings allow SMC parts to be moulded and coated in one operation.