FINDING THE BEST LEVEL OF FILLER MASTER BATCH TO BE ACCOMMODATED IN THIN GAUGED PRIMARY PACKAGING PRODUCTS

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Abstract:

"***Finding the best level of filler master batch to be accommodated in thin gauged primary packaging products***"

The main aim of this dissertationwas"Finding the best level of filler master batch to be accommodated in thin gauged primary packaging products", as currently there is only limited information available in the printed media especially for Thermoforming made thin gauged food contact plastic products.

Here only the thermoformed thin gauged primary packaging products made out of Polystyrene and Polypropylene materials were studied. To find out best filler level in plastic compounds 2 series of formulations such as Series N1 for Polystyrene based materials and Series N2 for Polypropylene based materials were prepared, where virgin filler load level varied from 0% to 25% were prepared and experimented. And these formulations were based on incremental addition of heavy filler such as Calcium Carbonate in virgin form as Filler Master Batch. Each and every Raw Material batches were tested for MFI (Melt flow Index) against the specification. Thin gauged sheets were extruded according to the decided formulation. Products were turnout via thermoforming process to test for consumer acceptance. Further in order to find out the best level of filler master batch to be accommodated to these products, thermoformed primary packaging was examined for Appearance Test, Specific Gravity test, Drop Test or Impact test, Oil Test and Actual Filler Master Batch test .Those testswere carried out to find out whether physical and aesthetic properties were compromised or not. It was observed during the trials that 25% Virgin FMB based formulated sheets were not suitable for thermoforming process as it tended to crack and torn like a paper. It was concluded through Actual FMB level test, that the accumulated Calcium Carbonate Filler level in the regrind introduced in these formulation had an impact on overall level of fillers in the extruded sheets had caused these cracks and defects. Based on the test results it was concluded that 26% of Filler in Styrene based materials and 40% of Fillers in polypropylene based materials were the optimum level of Filler Master Batch for these thin gauged primary packaging products.

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LIST OF ABBREVIATIONS

Abbreviation	Description
GPPS	General Purpose Polystyrene
HIPS	High Impact Polystyrene
PS	Polystyrene

PP	Polypropylene
FMB	Filler Master Batch
WMB	White Master Batch
RP	Recycled Plastics (Crush)