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EXPERIMENTALLY INVESTIGATES THE EFFECT OF INJECTION PRESSURE AND MELT TEMPERATURE ON FLEXURAL STRENGTH AND IMPACT RESISTANCE OF INJECTION MOLDED THERMOPLASTIC FOAMS

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The study experimentally investigates the effect of processing parameters on mechanical properties of injection molded thermoplastic Foams. Foams or cellular structure materials present a new class of structural materials that combine many advantages for future applications. Generally, foam materials retain the advantages of bulk materials with structures of low density. Usage of thermoplastic foams decrease the weight of parts and consumption of polymers also keep environment healthily. It is necessary to know the effects of the process parameters on structure and mechanical properties of parts, because it is needed to replace some modified and optimized parts which produced by thermoplastic foam. In this study the selected processing parameters were injection pressure and melt temperature. Semi-crystalline material, HDPE and azodicarbonamid (ADCA) as the chemical blowing agent were used for this study. A new shot-off nozzle design was used. A mold by rectangular cavity with dimensions of 105×105×3.2 mm was made. The Flexural properties of produced parts were measured according to ASTM and impact properties of the parts measured according to ASTM D256 - 02. The results show that both Flexural strength and impact resistance decrease with increasing the melt temperature. Also, by increasing injection pressure, Flexural strength decrease but impact strength increased. An acceptable impact and tensile properties is achievable via adjusting processing parameters Key words:thermoplastic foams,injection molding, Flexural strength, impact resistance