

Design and Development of Die for Rubber Seal

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Abstract: *The design and manufacturing of a die to produce rubber seals are vital factors in making the manufacturing process efficient, precise, and cost-effective. Rubber seals are essential elements utilized across industries such as automotive, aerospace, and manufacturing sectors to ensure a consistent sealing solution for leakage prevention and performance improvement. This research centers upon the process of designing and building specialized dies that are utilised in rubber seals production, identifying aspects such as the choice of material, die geometry, temperature regulation, and pressure distribution. A holistic method of die design is outlined, employing advanced manufacturing methods, including CAD (Computer-Aided Design) and CAE (Computer-Aided Engineering) simulations, to ensure optimum die performance and minimised production time. The research also examines critical parameters like rubber flow behavior, curing rates, and mold wear, offering an understanding of how these factors affect the final quality of the rubber seal. Through die design improvement, the research seeks to increase product uniformity, minimize defects, and decrease operational expenses, thus enhancing the overall efficiency in rubber seal production. The results of this work can be a basis for continued developments in rubber seal manufacturing and other elastomeric parts.*

Keywords: Die Design, Rubber Seal Production, Advanced Manufacturing, CAD (Computer-Aided Design), CAE (Computer-Aided Engineering), Rubber Flow Behavior, Curing Rates, Mold Wear

