Plastics extrusion is a high volume manufacturing process in which raw plastic material is melted and formed into a continuous profile. Extrusion produces items such as pipe/tubing, weather stripping, fence, deck railing, window frames, adhesive tape and wire insulation. There are fundamentally two different methods of extruding film, namely, below extrusion and slit die extrusion. The design and operation of the extruder up to the die is the same for both methods. The moulding process is one of the most important plastic processing operations. It is an important commercial process whereby a resinous polymeric compound is converted into useful finished articles. The origin of this process is dates back about a century to the invention of a plunger type machine. The mould has its own importance, which give the required shapes of the products. The vast growth of injection moulding is reflected dramatically in many types and sizes of equipment available today. Plastic moulding especially thermoplastic items may be produced by compression moulding methods, but since they are soft at the temperature involved, it is necessary to cool down the mould before they may be ejected. Injection moulding differs from compression moulding is that the plastic material is rendered fluid in a separate chamber or barrel, outside the mould it is then forced into the mould cavity by external pressure. Plastic technology is one of the most vigorous manufacturing branches, characterised by new raw materials, changing requirements, and continuous development in processing methods. The injection moulding machines manufacturers plays an important part in the creation of injection moulding technology, process control, to essential mechanical engineering. Even though design is a specialized phase in engineering field, in tool and mould engineering it is totally divided into two wings as product design and tool and die design. This book basically deals with transport phenomena in polymer films, reinforcements for thermosets, miscellaneous thermostet processes, injection molding, blow molding, extrusion, basic principles of injection moulding, correct injection speed is necessary for filling the mould, plastic melt should not suffer degradation, the mould must be controlled for better quality product, logical consideration of moulding profile and material is important than standard setting guide lines, economical setting of the machine, proper maintenance of machine; safety operations., preliminary checking for moulding, material, component, mould, machine, injection moulding technique, the various type of injection moulding machines, specifications, platen mounting of moulds, locating spigots, mould clamping, etc.
The book covers manufacturing processes of extruded and moulded products with the various mould designs. This is very useful book for new entrepreneurs, technocrats, researchers, libraries etc.

Contents

1. PREPARATION OF PLASMA FILMS

2. TRANSPORT PHENOMENA IN POLYMER FILMS

3. ACRYLIC FABRICATION
Band Saws, Drilling, Sanding and Polishing, Chips and Cracks, Cleaning, Solvent Cementing

4. REINFORCEMENTS FOR THERMOSETS

5. MISCELLANEOUS THERMOPLASTIC PROCESSES

6. MISCELLANEOUS THERMOSET PROCESSES

7 COMPRESSION AND TRANSFER MOLDING
Compression Molding, Molds, Compression Presses, Fastening the Mold, Closing and Opening the Mold, Heating the Mold, Types of Compression Molding, High-pressure Compression Molding, Molding Materials, Bulk Factor, Preforms and Preheating, Degassing, Molding Sequence, Molding Pressure, Estimating the Weight of Material Needed, Types of Molds, Advantages of Compression Molding, Limitations of Compression Molding, Solving Molding Problems (High-pressure Molding), Mold Sticking, Dull Surface, Blistering, Warping, Cracking, Unfilled Mold, Weak Moldings, Orange Peel, Pitted Surface, Burn Marks, Poor Electrical Properties, Transfer Molding, Plunger Molding, Advantages of Transfer Molding, Limitations of Transfer Molding, Low-pressure Compression Molding, Premix Molding, Preform Molding, SMC Molding, Molding Problems (Polyesters)

8 DISCIPLINED PROCESS STRATEGY FOR INJECTION MOULDING
Abstract, Preface, Temperature, Time, Pressure, Injection Rate, Cooling Rate, Comprehensive, Economical in time, Simple to do, Provide Qualitative results, Easy to interpret, Background, Spc Step One - Raw
Material, Single Step Measurement:, Time Dependent Sampling ;, SPC Step Two - Material Handling, Drying:, Blending:, SPC Step Three - Injection Molding, Weight , Operator , Primary Problem, SPC Step Four - Implementation, Management Support , Resources , Patience , Priority , Developments At Eastman Kodak Co, Discussion of Shrinkage/Time, Caveats, Example of Mode #2 Usage -process Analysis, Long Term Analysis, Raw Materials , Materials Handling , Inappropriate Operator Adjustments, Environmental/Utilities Changes , Short Term Analysis, Cycling Temperature Controllers , Worn Non-return Valves , Variability Evaluation of Figure 3, Benchmark For Process âœGoodnessâ—¥, Benchmark Evaluation of Figure 3, Summary, The Mold Must Exhibit an Acceptable Degree of Mold Balance., Overall level of unbalance, Quantitative identification of the most troublesome cavities , Reduce the second stage, Reduce the Boost Timer , Save ten (10) short shots in series, Separate the parts by cavity number and weight, ANALYSIS, Arrange the weights in descending order, Compute the weight differences , Normalize this weight difference , Plot this normalized difference, Evaluation, Action, Variables, Response, Preparation, Generating The Curves , Analysis, Time Procedure, Time Analysis, Pressure Procedure

9. INJECTION MOLDING, BLOW MOLDING, EXTRUSION

10. NEWLY DEVELOPED INJECTION MOULDING TECHNOLOGY
Introduction, Horizontal Screw Type Injection Moulding Machine, Vertical Screw Type Injection Moulding Machines, Other special purpose injection moulding machines, Further developments

11. INJECTION MOULDING

12. THE PLASTIC INJECTION MOULDING ENVIRONMENT IN INDIA
Introduction, A Deeper Look in the Problem, Change in the Moulding Shop -the Five M, Material, Machine, Mould, Man

13. TIEBARLESS AND 2-PLATEN INJECTIO MOULDING MACHINES
Trendspotting, Trendsetting, The Tiebarless Machine, The 2-Platen Machine, Further Trends

14. THIN WALLED INJECTION MOULDING
Definition of Thin Wall, Classification of parts, Examples of Small thin - wall pans, Examples, of partially thin-
wall parts, Other examples :, Evaluation of Production Cost, Factors to be considered in evaluating the cost performance -, Shortening of Cycle Time is one of the Key Points having Direct Influence on the Production Costs, Benefits of Thin Wall Moulding, Material Saving, Reduction in Shot Weight and Cycle Time, High Productivity, Energy Saving, Compact Size, Ease In Recycling, Higher Return of Investment, Factors of Flowability, Ratio of length to thickness , Viscosity, Melt Index (MI), Melt flow rate (MFR) of material, Machine total Performance, Mould & Machine Requirement For Thin Walled Injection Moulding, Mould Requirement:, Moulding Machine Requirement :, SG Series Injection Moulding Machines From Sumitomo Heavy Industries are Perfectly Suitable for Thin Walled Injection Moulding, How The SG Series Scores Over Ordinary Machines, Ordinary Machine, Main Responce , Remedy , SG Series Machines

15. MOLD COOLING BEST BET FOR HIGH PROFITS
General, Cooling in new moulds, Coaling in existing moulds, Cooling drawings, No cooling, Poor cooling, Better cooling, Excellent cooling , Costs, New moulds, Existing moulds, Chiller, Insulated chiller plumbing, Presses, Financial analysis, Benefits, Step by step investment, Spreadsheet, Shorter cycle times, Flash reduction, Profit gains, Other benefits, Summary

16. GAS INJECTIONMOULDING
TECHNOLOGY

17DESIGN

18. PRINCIPAL TYPES OF INJECTION MOULDS

19. MOULD MATERIALS AND PROCESSING METHODS
Introduction, Normalizing, Stress-relieving, Stabilizing, Stabilizing after welding with H13 filler rod, Pre-heating, Hardening, Quenching, Tempering, Annealing for re-hardening, Sub-zero Treatment., Mould Machining, Characters and Logo marking, Mould Polishing & Finishing, Photo Engraving, Mould Materials and Die Life

About NIIR
NIIR PROJECT CONSULTANCY SERVICES (NPCS) is a reliable name in the industrial world for offering integrated technical consultancy services. NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.


NPCS also publishes varies process technology, technical, reference, self employment and startup books, directory, business and industry database, bankable detailed project report, market research report on various industries, small scale industry and profit making business. Besides being used by manufacturers, industrialists and entrepreneurs, our publications are also used by professionals including project engineers, information services bureau, consultants and project consultancy firms as one of the input in their research.

Our Detailed Project report aims at providing all the critical data required by any entrepreneur vying to venture into Project. While expanding a current business or while venturing into new business, entrepreneurs are often faced with the dilemma of zeroing in on a suitable product/line.