

MOULD & DIES DESIGN - 1

1. INTRODUCTION

1. Basic Concept of Design
2. Design Principles.
3. Basic concept of Injection Mould.
4. Types of Injection Moulds.
5. Parts of Injection Moulds.
6. Selection of Moulding Machine
 - (a) Shot Capacity
 - (b) Plasticizing Capacity
 - (c) Clamping Force
 - (d) Daylight of the machine.
 - (e) Injection Pressure
 - (f) Machine Nozzle
 - (g) Number of Impression.

2. MATERIAL SELECTION OF MOULD & DIES

Steel

1. Selection criteria of mould material.
2. Essential properties of mould materials.
3. Steel, Various types of steel, selection criteria
4. Ferrous & Non-Ferrous material.
5. Alloys
6. Heat treatment process
7. Materials selection for various parts of mould.

- (i) Back Plate
- (ii) Core back plate
- (iii) Cavity
- (iv) Core
- (v) Guide pin & guide bush
- (vi) Sprue Bush
- (vii) Inserts
- (viii) Ejector back & retainer plate
- (ix) Locating ring.

8. Material selection for various parts of dies.

- (i) Approach section
- (ii) Land

3. INJECTION MOLD - 1

1. Introduction

2. Parting Line

- (i) Flat parting surface
- (ii) Stepped parting surface
- (iii) Angled Parting surface.
- (iv) Complex edge
- (v) Venting.

3. Feed System

(A) Sprue & Sprue designs

(B) Runner

- Runner layout & cross section
- Runner balancing.

(C) Gates

- Types of gates
- Gate balancing

(D) Impression

- Core
- Cavity.

4. Ejection System

- Types of Ejection
- Importance of Ejection.

5. Mould Cooling

- Importance of mould cooling
- Different mould cooling methods.
- Mould Temperature control & its importance

6. Ancillary parts of Injection Mould

- Mould Alignment → Locating ring, Guide pillar
- Knock out rods
- Limit bolts.

4. INJECTION MOULD - II

1. Methodical approach of Injection Mould Design
2. Types of Injection Moulds
 - (a) Two plate mould / OR Single day light mould
 - (b) Single impression & multi impression mould.
 - (c) Stepper plate mould.
 - (d) Multi day light mould
 - Three plate mould
 - External & Internal under cut mould.
 - Split mould
 - Dog leg cam actuation method
 - Finger cam actuation method.
 - (e) Moulds for threaded components
 - Automatic unscrewing
 - Various unscrewing methods
 - (f) Runnerless Moulds
 - (g) Insulated & Hot runner mould.
 - (h) Insect moulds
 - (i) Stack moulds.

Smiley

Sum

5. EXTRUSION DIE DESIGN

1. Introduction of Dies
2. Principle of extrusion
3. Parts of Dies
4. Die Operations
5. Design procedure
6. General features of dies
7. Polymer melt flow
8. Die geometry
9. Die land
10. Die swell
11. Heating & Temperature of control system for Dies.

12. Design features of dies for

- (i) Profiles
- (ii) Blown Film
- (iii) Flat Film
- (iv) Tubes & Pipes
- (v) Wires & Cables

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