

Fundamentals of Injection Mold Design

Seminar Syllabus

Day One

The Molding Cycle ☺ Injection ☺ Cooling ☺ Ejection ☺ Reasons for Type of Mold
Mold Classifications ☺ SPI Class 101 ☺ 102 ☺ 103 ☺ 104 ☺ 105
Factors in Cost of the Mold ☺ Design ☺ Mold Base ☺ Materials ☺ Runner System ☺ Components ☺ Labor
Types of Mold Bases ☺ A, B, T, X ☺ Unit ☺ Unscrewing ☺ Shuttle ☺ Stack ☺ Special
Starting the Mold Design ☺ Data ☺ Solid Model ☺ Design Steps ☺ Views in Mold Design
Nomenclature of the Mold ☺ Components ☺ Guide Systems ☺ Locating Systems ☺ Sprue Bushing ☺ Interlocks
Mold Details ☺ Width ☺ Length ☺ Height ☺ Plate thickness ☺ Standard Numbering System
Cost of Molding a Part ☺ Material ☺ Hourly Rate ☺ Labor ☺ Overhead ☺ Sales and Administrative Costs ☺ Profit
Design Steps ☺ Parting Lines and Types ☺ Surrounding with Steel ☺ Ejector Locations ☺ Plates and Applications
Cavity and Core ☺ Inserts ☺ Number per Block ☺ Determining Ejector Side
Draft ☺ Direction ☺ Reason ☺ Degree ☺ Application Rules ☺ Role in Ejection
Identifying the Mold ☺ Zero-Zero Corner ☺ Cavity Identification ☺ Component Identification
Cavity and Core ☺ Placement ☺ Usable Mold Area ☺ Cavity and Core Press ☺ Mounting Methods
Conventional Runner Systems ☺ Full Round ☺ Half Round ☺ Trapezoidal ☺ Efficiencies
Gate Styles ☺ Sprue ☺ Edge ☺ Overlap ☺ Submarine ☺ Cashew ☺ Tab ☺ Fan ☺ Film Diaphragm ☺ Pin Point ☺ Ring
Runnerless Molding Systems ☺ Internally Heated ☺ Externally Heated Manifolds ☺ Bushings ☺ Drops ☺ Valve Gates

Day Two

Balancing the Mold ☺ Feed Systems ☺ Cooling ☺ Pressures
Temperature Control (Cooling) ☺ Principles ☺ Flow Variables ☺ Channels ☺ Baffles ☺ Bubblers ☺ Pitch Distances
Plastic Part Analysis ☺ Flow ☺ Cooling ☺ Warpage ☺ Shrinkage
Venting the Cavity ☺ Parting Line Vents ☺ Inserts ☺ Ejector Pins ☺ Cores
Ejector Systems ☺ Conventional Pins ☺ Blade Ejectors ☺ Sleeves ☺ Stripper Plates ☺ Air Poppets ☺ Failure Modes
Mold Interlocks ☺ Tapered ☺ Straight ☺ Integral ☺ How to Place
Shrink Rates ☺ Calculations ☺ How Plastics Shrinks ☺ General Rates ☺ Importance of Steel Safe
Mold Materials ☺ Mold Base ☺ Cavity ☺ Core ☺ Criteria ☺ Hardness ☺ Thermal Conductivity ☺ Polishability
Cavity Finish ☺ Finish Types ☺ Texturing ☺ Engraving ☺ Plating and Coatings
Mold Detailing ☺ Plan Views ☺ Short Section ☺ Long Section ☺ Bill of Materials
Mold Actions ☺ Undercuts ☺ Mechanical Slide Action ☺ Hydraulic Side Cores ☺ Lifters ☺ Unscrewing Cores
☺ Collapsible Cores ☺ Wedges ☺ Multiple Slides ☺ Expandable Cavities
Strength of Mold ☺ Formulas ☺ Side Walls ☺ Bending ☺ Flexing ☺ Component Failure

Course Content Subject to Change due to Participant Interests and Questions