

# TRAINING: SOLIDWORKS Plastics (3 Days)

**Prerequisites:** SOLIDWORKS Essentials and fundamental knowledge of plastic materials, plastic part design, and injection mold design

**Description:** The SOLIDWORKS Plastics course teaches you how to use specialized simulation software tools to predict how melted plastic flows during the injection molding process. Predicting how the plastic will flow enables you to predict manufacturing defects such as weld lines, air traps, short shots, and sink marks. By predicting these defects, you can change the part or mold geometry, the processing conditions, or the plastic material to eliminate or minimize them, saving energy, material, time, and money. The SOLIDWORKS Plastics course covers all the features and functions of both SOLIDWORKS Plastics Professional (for part designers) and SOLIDWORKS Plastics Premium (for mold designers).

## Introduction

- About This Course
- Injection Molding
- SOLIDWORKS Plastics Standard, Professional, Premium

## Lesson 1: Basic Fill Analysis

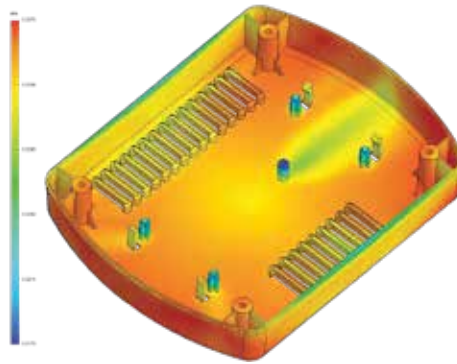
- Basic Fill Analysis
- New Study
- Injection Process
- Element Types
- Units
- Injection Units
- Plastic Material Database
- Boundary Conditions
- Injection Location
- Create Mesh
- Simulation Type (Cool, Fill, Pack, Warp)
- Run
- Fill Results (Fill Time, Weld Lines, Results Adviser)

## Lesson 2: Detecting a Short Shot

- Fill Properties
- Flow Front Central Temperature
- Configurations

## Lesson 3: Automation Tools

- Automation Tools
- Duplicate Study
- Plastics File Management
- Batch Manager
- Summary and Report

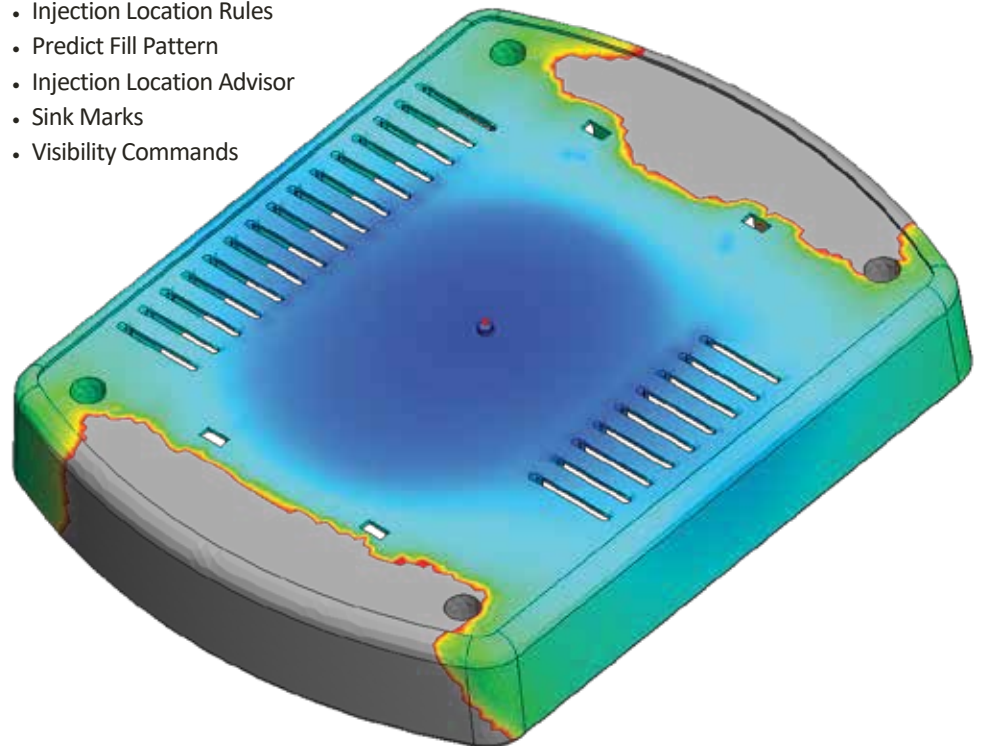


## Lesson 5: Materials

- Material Properties
- User-defined Database
- Resin Properties
- Temperature Properties
- Heat Transfer Properties
- Viscosity
- PVT Data
- Mechanical Properties

## Lesson 4: Injection Locations and Sink Marks

- Injection Locations and Sink Marks
- Injection Location Rules
- Predict Fill Pattern
- Injection Location Advisor
- Sink Marks
- Visibility Commands



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## Lesson 6: Mesh Manipulation

- Local Mesh Refinement
- Edit/Review
- Element Issues
- Leader Lines
- Edit Study
- Solid Mesh
- Solid mesh size

## Lesson 7: Detecting Air Traps

- Air Traps (Dieseling Effect, Plot Ranges, Thickness Analysis)
- Venting
- Solver Settings

## Lesson 8: Gate Blush

- Runner Elements
- Gate Blush (Shear Stress)
- Reducing Gate Blush

## Lesson 9: Packing and Cooling Times

- Flow/Pack Switch
- Pack Stage
- Pack Analysis
- Pack Results
- X-Y Plot (Volumetric Shrinkage at End of Packing)
- Clipping Plane Mode
- Isosurface Mode
- Cooling Times

## Lesson 10: Multiple Cavity Molds

- Multiple Cavity Molds
- Stages in the Process
- Mold Layouts
- Runner System
- Runner Channel Design
- Runner Types
- Searching for Polymers
- Clamping Force
- Clamp Force Limit
- Family Mold Layout
- Using Runner-Balancing

## Lesson 11: Symmetry Analysis

- Symmetry
- Cyclic Symmetry
- Cyclic

## Lesson 12: Valve Gates and Hot Runners

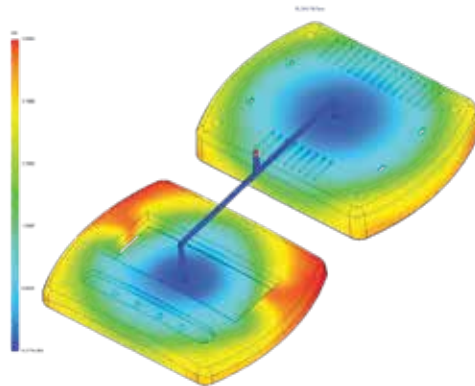
- Valve Gates and Hot Runners
- Stages in the Process
- Hot Runners
- Valve Gates
- Control Valve

## Lesson 13: Reaction Injection Molding

- Reaction Injection Molding

## Lesson 14: Using Inserts

- Inserts
- Metal Material Database
- Insert Settings
- Hiding Cavities and Inserts



## Lesson 15: Multi Material Overmolding

- Multi Material Overmolding
- Assigning Injection Units

## Lesson 16: Co-Injection Molding

- Co-Injection Molding
- Thick Parts
- Co-Injection
- Gas-Assist
- Water-Assist

## Lesson 17: Bi-Injection Molding

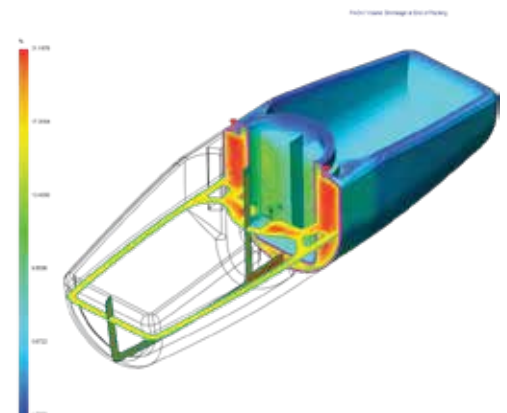
- Copy and Paste
- Bi-Injection
- Injection Start Value

## Lesson 18: Cooling Analysis

- Cooling
- Cool Simulation
- Cooling Channels and Mold Bodies
- Baffle
- Bubbler
- Cooling Simulations
- Coolant Input
- Mold Wall Temperature
- Coolant
- Mold
- Cool Parameters
- Cool Analysis
- Cool Results

## Lesson 19: Warpage Analysis

- Shrinkage
- Reducing Shrinkage
- Warpage
- Warp Parameters
- Warp Results
- Reducing and Fixing Warped Parts
- Thermal Contributions to Warping
- Typical Warp Shapes
- Residual Stress



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