Product Information Sheet

Injection Molding Trainer

Our STEM learning packages have been designed to provide practical real world problem solving tasks and activities within the classroom or lab environment.

These activities will provide an engaging approach that helps instructors show contextualized linkages between Science, Technology, Engineering, and Mathematics.

Students will have access to hands on learning opportunities within our optional cloud-based STEM curriculum software packages. This easy to use software also contains theory presentations, virtual investigations, and support materials to underpin the practical tasks.

The Injection Molding Trainer offers a classroom-based resource for investigating the techniques used to create thermo-plastic products.

Students initially use the trainer to mold a variety of items, including a model car and different designs of door handles.

Using the trainer alongside a 3D printer allows students to follow rapid prototyping and tooling techniques, including:

- 3D printing, evaluation and improvement of prototypes
- 3D printing of injection molds
- Injection molding of the final product

Students apply these techniques to develop various items including a headphone cord wrap and a multi-part gear mechanism.

Students will see how a good grasp of the science of material properties is needed to select appropriate materials and methods for production. They will also gain an understanding of how mathematics is required to develop production costs and propose selling costs.

The trainer includes a curriculum disc containing theory and practical learning tasks, as well as tutor support materials.

Typical Topics Include:

- Plastics
- Design
- Materials
- Material Properties
- Testing Properties of Materials
- Injection Molding
- Tools and Fabrication
- Suitable Product Materials
- Waste, Recycling and Cost
- Problem Solving
- 3D Printing Materials and Applications
- 3D Printing Process
- Rapid Prototyping
- Rapid Tooling

Typical Practical Activities:

- Injection mold the parts for a model car
- Mold different doorknob designs and test each one for strength
- Investigate why a mold must be securely clamped
- Mold a plastic handled screwdriver with a metal blade
- Adapt an existing mold design to make a corn cob holder
- Use a 3D printer to print a test object
- 3D print a prototype of a headphone cord wrap
- 3D print an injection mold tool for the cord wrap
- Evaluate the quality of the molded part
- Adapt the 3D printed mold tool to overcome molding problems such as flashing, surface finish and shrinkage
- 3D print a mold for a multi-part gear mechanism and test the design
- Explore the benefits of adding a draft angle to a mold
- Investigate the effects of component undercuts and overhangs on mold tool design
- Design project – design a new component suitable for mass production

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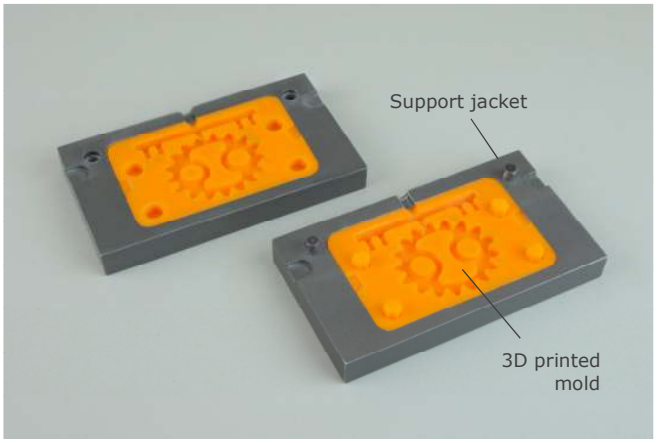
Injection Molding Trainer

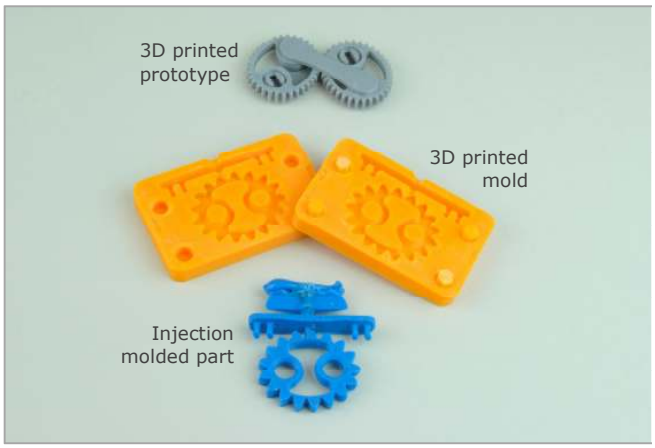
Items Included:
- Injection Molder and Lever
- Mold Set containing:
  - Single-part mold (for molding tokens)
  - Multi-part mold (for molding a model car)
  - Adaptable 'smart' mold (for molding door handles, screwdrivers and corn cob holders)
  - Support jacket for 3D printed molds
- Plastic Granule Supply (5 kg)
- Model Cabinet Door (for testing door handle designs)
- PPE (Gloves)
- Curriculum Disc

Other Items Required:
- 3D printer and software (LJ Create 3DP-01 or equivalent)
- ABS filament material for 3D printing
- CAD software (for final Design Project only)
- LJ Create Engineering or Technology Content (Optional)
- Computer with DVD Drive

General Information:
Trainer Dimensions: 155 x 530 x 380 mm (W x H x D)
Power Requirements: 110 – 240V 50-60Hz
Packed Volume: Approx. 0.176 m^3
Packed Weight: Approx. 44.5 kg



Support jackets are used to hold 3D printed molds during the injection molding process



Rapid manufacturing techniques applied to a multi-part gear mechanism

Order Code: 350-01

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