Plastics Manufacturing – Mold Changeover Procedure in Injection Molding			
Document ID	SOP-PLASTICS-MOLD-021	**Version**	2.2
Reviewed by	Marcus Macallister (Production Supervisor)	**Approved by**	Richard Perez (Manufacturing Manager)
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Plastics Manufacturing – Mold Changeover Procedure in Injection Molding

1. Purpose

To define the standardized procedure for **performing mold changeovers on injection molding machines**, ensuring safety, efficiency, and product quality.

2. Scope

This procedure applies to **all injection molding machines used in the production of plastic components at the job shop facility.**

3. Objectives

- Minimize downtime during mold changes.
- Ensure proper installation and alignment of molds.
- Maintain consistent product quality and machine safety.

4. Tools and Materials

- Overhead crane or hoist
- Torque wrenches
- Mold release agent
- Cleaning solvents and cloths
- Alignment pins
- Personal Protective Equipment (PPE): gloves, safety glasses, steel-toe boots

5. Applicable Regulations

- OSHA 1910.147 (Lockout/Tagout)
- ISO 20430:2020 – Safety of Injection Molding Machines
- Internal safety and quality procedures

6. Procedure

6.1 Preparation

- Notify the shift supervisor and maintenance team.
- Review the mold change schedule and verify the next mold ID.
- Ensure the new mold is clean, inspected, and ready for installation.

6.2 Machine Shutdown

a) Perform lockout/tagout steps:

1. Preparation

- **Identify all energy sources**: Electrical, hydraulic, pneumatic, thermal, and mechanical.
- **Review machine documentation**: Understand the mold change process and energy isolation points.

2. Notify Affected Personnel

- Inform operators, technicians, and supervisors that the machine will be shut down and locked out for mold change or maintenance.

3. Shut Down the Machine

Follow standard shutdown procedures:

- Stop the injection cycle.
- Turn off the main power switch.
- Allow pressure to bleed off (hydraulic/pneumatic).

4. Isolate Energy Sources

- **Electrical**: Turn off and lock the main disconnect switch.
- **Hydraulic**: Shut off valves and bleed pressure from lines.
- **Pneumatic**: Close air supply valves and vent residual pressure.
- **Thermal**: Turn off heaters and allow cooling.
- **Mechanical**: Secure moving parts (e.g., clamp units, ejectors).

5. Apply Lockout Devices

- Place **locks** on each energy isolation point.
- Attach **tags** indicating:
  - Name of person performing LOTO.
  - Date and reason for lockout.
  - Contact information.

6. Release Stored Energy

- Bleed off residual pressure from hydraulic/pneumatic systems.
- Discharge capacitors if applicable.
- Block or secure any moving parts.

7. Verify Isolation

- Attempt to start the machine using the control panel (should not respond).
- Check gauges and indicators to confirm zero energy.
- Use test equipment if needed (e.g., voltage tester).

8. Allow the machine to cool down to a safe temperature.

6.3 Mold Removal

- Disconnect water lines, hydraulic lines, and electrical connections.
- Use the crane to remove the current mold carefully.
- Place the removed mold in the designated storage area.

6.4 Mold Installation

- Position the new mold using the crane.
- Align using guide pins and secure with bolts using torque wrenches.
- Reconnect all utilities (water, hydraulics, sensors).

6.5 Testing and Validation

9. Remove Lockout/Tagout Devices (After Work Completion)

- Inspect the machine and ensure all tools are placed.
- Reconnect energy sources in reverse order.
- Remove locks and tags **only by the person who applied them**.
- Notify affected personnel that the machine is ready for operation.

10. Restart and Test

- Power on the machine.
- Run a test cycle to ensure proper mold installation and machine function.
- Run a test shot and inspect the **first 5 parts for quality.**

6.6 Documentation

- Complete the mold changeover checklist.
- Record mold ID, time of change, operator name, and test results.

7. Multimedia Aids

In paper procedure document:

- Photos of correct and incorrect mold alignments

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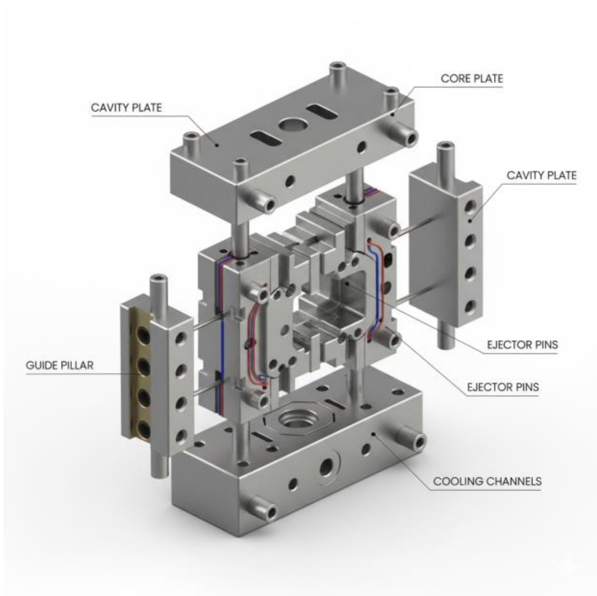

In digital OMS/ SOP's procedures

- 3D diagrams of mold installation points
- Step-by-step instructional video
- Audio safety reminders for lockout/tagout

8. Quality Controls

- First Article Inspection (FAI) after mold change
- Verification of part dimensions and surface finish
- Daily mold maintenance log

9. Problem Resolution

- If mold does not align properly, stop the process and notify maintenance.
- In case of hydraulic or electrical connection issues, follow troubleshooting guide and escalate if unresolved.
- Document any deviations and corrective actions in the mold change log.