



What is a Golden Sample?

A **Golden Sample** is the perfect example of a molded part that meets all specifications, dimensional tolerances, cosmetic appearance, mechanical properties, and functional performance. It acts as a reference standard for production and quality control.

Purpose of a Golden Sample

- **Quality Benchmark:** Sets the exact standards for inspection and acceptance criteria.
 - **Process Validation:** Confirms the mold and process can produce parts within specifications consistently.
 - **Communication Tool:** Aligns the mold maker, molder, and customer on expectations.
 - **Troubleshooting Reference:** Helps identify deviations in production when issues arise.
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When to Produce the Golden Sample?

- **During Mold Validation:** After the mold is complete and first shots are produced.
 - **Before Mass Production:** Ensures production setup can replicate the approved sample.
 - **Process Qualification (PPAP or IQ/OQ/PQ):** Required for formal validation in regulated industries.
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Steps to Produce a Golden Sample

1. Pre-Molding Preparation

- **Design Review:** Confirm the part and mold designs are finalized.
- **Material Selection:** Use the exact production resin, including any additives or colorants.
- **Process Parameters:** Set initial molding conditions based on scientific molding principles.
- **Machine Setup:** Use the production machine intended for mass production.

2. First Shots and Initial Inspection

- Run the mold and produce initial parts.
- Check for short shots, flash, warpage, sink marks, burn marks, and any visual defects.
- Adjust parameters (temperature, pressure, injection speed, cooling time) to optimize part quality.

3. Dimensional Inspection

- Use calipers, CMM, optical scanners, or other metrology tools.
- Measure critical dimensions identified in the design and GD&T.
- Confirm all dimensions are within tolerance.

4. Cosmetic and Functional Inspection

- Visual check for surface finish, color consistency, and absence of defects.
- Functional tests (fit, assembly, mechanical strength, sealing, etc.) as applicable.

5. Documentation

- Record all process parameters: melt temp, mold temp, injection pressure, pack/hold pressures, cycle time.
- Capture inspection reports, photos of the Golden Sample.
- Store the physical Golden Sample securely as a reference.

6. Approval

- Share the Golden Sample and documentation with customer and mold maker.
- Get formal sign-off or acceptance.

Best Practices for Golden Samples

- **Stabilize the Process:** Make sure the process is in a steady state before taking samples.
- **Use Production Tooling and Material:** No prototypes or alternate resins.
- **Environmental Control:** Consider temperature and humidity as they affect molding.
- **Multiple Samples:** Produce a small batch (5-10 parts) to demonstrate consistency.
- **Traceability:** Label Golden Samples with part number, mold number, date, and shift.

How Golden Samples Are Used in Production

- **Incoming Inspection:** Production parts are compared dimensionally and visually to the Golden Sample.
- **Process Monitoring:** Any deviations trigger root cause analysis using the Golden Sample as a baseline.
- **Supplier Communication:** Vendors and molders use it to align expectations.

- **Regulatory Compliance:** Acts as evidence in audits and certifications.
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Challenges and Considerations

- **Changes Over Time:** Tool wear or resin lot changes can cause parts to drift from Golden Sample specs.
 - **Multiple Cavities:** Golden Samples might come from one cavity; ensure others also meet standards.
 - **Complex Parts:** May require multiple Golden Samples showing different inspection angles or tests.
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Summary

Producing a Golden Sample is a critical step to ensure injection molding quality and consistency. It requires careful setup, inspection, and documentation. This sample is the yardstick for all future parts and is essential for process validation and supplier-customer trust.

We hope this helps you understand The Golden Sample

At True Position Plastics, we specialize in complete tooling and process solutions from DFM and mold design reviews to complex multi-cavity mold builds, including 3-plate systems, hot runner designs, and insert molding.

We work directly with trusted global mold vendors, providing full project management from initial quotation to first shots and press-side support during validation.

If you have an injection molding project, mold design question, or need a second set of experienced eyes on your tooling we're here to help.

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