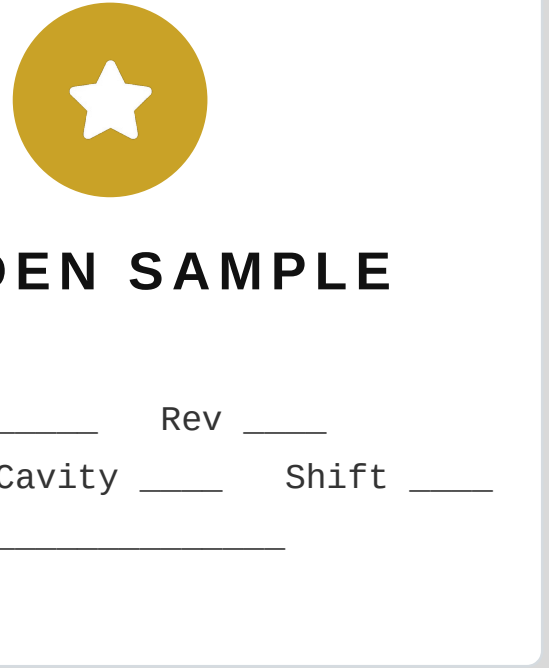
TRUE POSITION PLASTICS

QUALITY GUIDE

The Golden Sample

What it is, how to make one, and how to use it

The reference part that sets the standard for every molded part that follows.



2026 Edition

What is a golden sample?

A golden sample is the perfect example of a molded part that meets every specification: dimensional tolerances, cosmetic appearance, mechanical properties, and functional performance. It is the reference standard for production and quality control.

Quality benchmark

Sets the exact standard for inspection and acceptance criteria.

Process validation

Confirms the mold and process can make in-spec parts consistently.

Communication tool

Aligns the mold maker, molder, and customer on expectations.

Troubleshooting reference

Helps identify deviations when production issues arise.

TIMING

When to produce the golden sample



During mold validation

After the mold is complete and the first shots are produced and corrected.

Before mass production

Proves the production setup can replicate the approved sample, shot after shot.

For process qualification

Required for formal validation (PPAP, or IQ/OQ/PQ) in regulated industries such as medical and automotive.

Six steps to a golden sample (1 of 2)

STEP 1

Pre-molding preparation

- Design review: part and mold designs are final
- Material: exact production resin, additives, and colorant
- Process: initial conditions set with scientific molding
- Machine: the production press intended for mass production

STEP 2

First shots & initial inspection

- Run the mold and produce initial parts
- Check for short shots, flash, warp, sink, burns, and visual defects
- Adjust temperature, pressure, injection speed, and cooling time to optimize quality

STEP 3

Dimensional inspection

- Calipers, CMM, optical scanners, or other metrology tools
- Measure the critical dimensions identified in the design and GD&T
- Confirm every dimension is within tolerance

Six steps to a golden sample (2 of 2)

STEP 4

Cosmetic & functional inspection

- Visual check: surface finish, color consistency, no defects
- Functional tests as applicable: fit, assembly, mechanical strength, sealing

STEP 5

Documentation

- Record the process: melt temp, mold temp, injection pressure, pack/hold pressures, cycle time
- Capture inspection reports and photos of the golden sample
- Store the physical sample securely as a reference

STEP 6

Approval

- Share the sample and documentation with the customer and mold maker
- Get formal sign-off or acceptance

Best practices for golden samples

Stabilize the process	Make sure the process is at steady state before taking samples.
Production tooling and material	No prototype tools, no alternate resins.
Environmental control	Temperature and humidity affect molding and measurement.
Multiple samples	Produce a small batch (5–10 parts) to demonstrate consistency.
Traceability	Label with part number, mold number, cavity, date, and shift.

GOLDEN SAMPLE

Part no. / Rev

Mold no. / Cavity

Resin & lot

Date / Shift

Process sheet ID

Approved by / Date

How golden samples are used in production

Incoming inspection

Production parts are compared dimensionally and visually to the golden sample.

Process monitoring

Any deviation triggers root cause analysis, with the golden sample as the baseline.

Supplier communication

Vendors and molders use it to align expectations.

Regulatory compliance

Serves as evidence in audits and certifications.

Limit samples, storage, and retention

Limit (boundary) samples

- A golden sample shows the ideal part; limit samples show the worst acceptable condition for a cosmetic defect.
- Make one for each attribute that needs a judgment call: gate vestige, flow lines, sink, color, gloss.
- Pair them with agreed lighting and viewing distance so inspectors make the same call every shift.

Storage and retention

- Seal each sample in a labeled bag; keep it away from heat, sunlight (UV), and handling.
- Store it with its inspection report and process sheet. The data is the real reference; plastic parts can change with age and moisture.
- Keep a sample per cavity on multi-cavity tools.
- Keep samples for the life of the program, or as your quality system or customer requires.

WATCH FOR

Challenges and when to re-approve

Changes over time

Tool wear or resin lot changes can make parts drift from the golden sample.

Multiple cavities

A golden sample may come from one cavity; make sure every cavity also meets the standard.

Complex parts

May need several golden samples showing different inspection angles or tests.

Re-approve the golden sample after

- Tool repairs, welds, or steel changes
- Engineering changes (ECOs) to the part
- A mold transfer to a new press or plant
- A resin grade, supplier, or colorant change
- A significant process change

SUMMARY

The yardstick for every part that follows



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

Build it right

Production tool, production resin, production press, stable process.

Prove it

Dimensional, cosmetic, and functional inspection with documented data.

Protect it

Label, seal, store, and re-approve it whenever something changes.

We hope this helps you understand the golden sample.

About 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 quotation to first shots and press-side support during validation.

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

TRUE POSITION PLASTICS
WWW.TRUEPOSITIONPLASTICS.COM

Contact us
justin@truepositionplastics.com
www.truepositionplastics.com
650-313-1715

Scan to visit