This guide covers various aspects of mold manufacturing, from appearance to internal structure, from machining precision to ease of use. Following these standards can ensure the quality and service life of the mold.

1. Mold Appearance:
    - Complete nameplate content, including mold number, weight, dimensions
    - Clear markings for cooling water nozzles, oil and air nozzles
    - Clear datum corner symbols
    - Clear numbering of mold components
    - Mold surface free from dents, rust marks, or defects
    - Mold easy to hoist and transport
2. Ejection Reset, Core Pulling, and Part Removal:
    - Smooth ejection without jamming
    - Travel limits for sliding blocks and core pulling mechanisms
    - Proper design for large sliding blocks, including wear plates
    - Anti-rotation positioning for ejector pins
    - Correct spring selection and installation
    - Suitable for robotic part removal
3. Cooling System:
    - Sufficient and unobstructed cooling water channels
    - Good sealing without water leakage
    - Correct machining and installation of O-ring grooves
4. General Gating System:
    - Well-polished runners
    - Proper design for three-plate molds
    - Gates and runners machined according to drawings
    - Easy runner removal
5. Hot Runner System:
    - Reasonable wiring layout, easy to maintain
    - Good safety performance
    - Accurate temperature control
    - Good sealing for hot nozzle installation
    - Proper insulation design
6. Molding Section, Parting Surface, Venting Grooves:
    - Clean and tidy parting surfaces
    - Proper venting groove depths
    - Reliable positioning and fixing of inserts and cores
    - Polishing as required
    - Correct numbering of parts
    - Mirror finish polishing for transparent parts
7. Packaging:
    - Rust prevention treatment for mold cavities
    - Lubrication of sliding parts
    - Complete accompanying documents
    - Complete spare parts list
    - Proper packaging

I. Mold Appearance:

1. Check if the nameplate content includes mold number, mold weight (KG), and mold dimensions (mm), with characters printed using 1/8-inch font size, clear and neatly arranged.

2. Verify if the nameplate is securely fixed on the mold base near the back mold plate and datum corner (15mm distance from both sides), fastened with four rivets, reliable and not easily peeled off.

3. Ensure cooling water nozzles use plastic insert water nozzles, Φ10 pipe, specifications can be G1/8", G1/4", G3/8".

4. Check if cooling water nozzles protrude from the mold surface, with nozzle heads recessed no more than 3mm from the outer surface.

5. Verify if cooling water nozzle clearance holes have diameters of Φ25, Φ30, Φ 35mm, with chamfered edges greater than 1.5×45°, consistent chamfer.

6. Ensure cooling water nozzles have inlet and outlet markings, "IN" for inlet, "OUT" for outlet, followed by sequence numbers (e.g., IN1, OUT1).

7. Check if English characters and numbers are uppercase (5/6"), positioned 10mm below the water nozzle, clear, aesthetic, neat, and evenly spaced.

8. Verify if oil and air inlet/outlet nozzles are similar to cooling water nozzles, with "A" (air) or "O" (oil) added before IN and OUT, leaving one character space.

9. For water nozzles on the upper and lower sides of the mold installation direction, check if they are internally mounted with flow grooves or supported by pillars for protection.

10. Ensure oil or water nozzles that cannot be internally mounted have supporting pillars for protection.

11. Verify if mold base have datum corner symbols, uppercase "DATUM", 5/16" high, positioned 10mm from the edge, clear, aesthetic, neat, and evenly spaced.

12. Check if each mold plate has part numbers, positioned 10mm below the datum corner symbol, with the same requirements as item 11.

13. Ensure mold accessories do not affect mold hoisting and storage. If there are protruding hydraulic cylinders, water nozzles, or pre-reset mechanisms during installation, they should have supporting legs for protection.

14. Verify if supporting legs are fixed to the mold base using screws through the legs, or if long supporting legs have external threads machined to fasten to the mold base.

15. Check if ejector holes match the specified injection molding machine. Except for small molds, generally avoid using only one central ejector (when mold length or width is greater than 500mm). Ejector hole diameter should be 5-10mm larger than the ejector pin.

16. Ensure locating rings are securely fixed (generally using three M6 or M8 socket head screws), typically Φ100 or Φ150mm in diameter, protruding 10mm above the top plate. Follow contract for special requirements.

17. Verify that locating ring mounting holes are countersunk and not directly attached to the mold base top surface.

18. For molds weighing over 8000KG, check if through-hole screw fastening is used when installed on the injection molding machine, not relying solely on pressure plates. If hydraulic mold clamping is used, additional screw holes must be added to prevent hydraulic mechanism failure.

19. Ensure the location ring hole radius (R) is larger than the injection machine nozzle radius.

20. Verify if the sprue bushing inlet diameter is larger than the injection nozzle outlet diameter.

21. Check if mold dimensions comply with the specified injection molding machine.

22. For molds with specific installation direction requirements, verify if an arrow indicating the installation direction is marked on the front or back mold plate, with "UP" text next to the arrow. Arrow and text should be stenciled in yellow paint, 50mm high.

23. Check mold base surface for dents, rust marks, unnecessary lifting eyes, inlet/outlet water/air/oil holes, and other appearance-affecting defects.

24. Ensure all mold base plates have chamfers greater than 1.5mm.

25. Verify if the mold is easy to hoist and transport without disassembling mold components (except hydraulic cylinders, which need separate packaging). If lifting eyes interfere with water nozzles, hydraulic cylinders, or pre-reset rods, adjust lifting eye hole positions.

26. Check if every mold component weighing over 10KG has suitable lifting eye holes. If not, ensure measures are in place for easy component disassembly and installation. Design lifting eye size and hole positions according to relevant enterprise standards.

27. Verify if lifting eyes can be fully rotated and provide balanced hoisting.

28. For ejector pins, ejector blades, and other ejection mechanisms that may interfere with sliding blocks, check if there is a forced pre-reset mechanism with a reset limit switch on the ejector plate.

29. Ensure hydraulic cylinder core pulling and ejection have reliable limit switch control.

30. Verify if the mold oil distributor is securely fixed.

31. Check if hoses connecting the oil distributor and cylinders use standard fittings.

32. Ensure the ejector plate has trash pins.

33. Verify if the mold support head area is 25-30% of the rear mold plate area between the square legs.

34. Check if support pillar heads are 0.05-0.15mm higher than mold legs and do not interfere with ejector holes.

35. Ensure mold locks are securely installed, have locating pins, symmetrically installed,

and not fewer than 4 (2 for small molds).

36. For three-plate molds, verify if there are springs between the front mold plate and runner plate to assist mold opening.

37. For large molds, check if there is any interference when all components are installed, and the mold is closed.

38. If the injection molding machine uses an extended nozzle, ensure sufficient space inside the locating ring to accommodate a standard extended nozzle with heating ring.

39. Verify if all cams can be disassembled from a hole through the bottom plate and ejector base plate, with an angle consistent with the angled ejector.

40. Ensure screw mounting hole bottom surfaces are flat.

II. Ejection Reset, Core Pulling, and Part Removal:

1. Check if ejection is smooth, without jamming or abnormal noise.

2. Verify if cam surfaces are polished and 0.1-0.15mm lower than the core surface.

3. Ensure cam have guide slots made of phosphor bronze, internally mounted in the rear mold base, fixed with screws, and positioned with locating pins.

4. Check if ejector pin end faces are 0-0.1mm lower than the core surface.

5. Verify if sliding parts have oil grooves (except ejector pins) and undergo nitriding treatment with HV700 hardness. (Large sliding blocks according to customer requirements)

6. Ensure all ejector pins have anti-rotation positioning, following the three positioning methods in enterprise standards, and are numbered.

7. Check if the ejector plate resets to the bottom.

8. Verify if ejection distance is limited by limit blocks, made of 45# steel, not replaced by screws, with flat bottom surfaces.

9. Ensure springs are standard parts, with ends not ground or cut.

10. Verify if spring installation holes have flat bottoms and diameters 5mm larger than the spring.

11. For springs with diameters exceeding Φ 20mm, check if there is a guide rod inside, 10-15mm longer than the spring.

12. Generally, verify if blue mold springs (light load) are used, red for heavy loads, and yellow for lighter loads.

13. Ensure springs have pre-compression, 10-15% of the total spring length.

14. Verify if pressure plates for cams and lifters are made of 638 materials, nitride to HV700 hardness or T8A, heat-treated to HRC50-55.

15. Check if sliding blocks and core pulling mechanisms have travel limits. Small sliding blocks should use springs for limiting; where springs are inconvenient, ball spring stopper can be used. Hydraulic cylinder

core pulling should have limit switches.

16. Verify if sliding block for core pulling generally uses cams, with angles 2-3 degrees smaller than the sliding block locking surface angle. Use hydraulic cylinders for long travel distances.

17. For hydraulic cylinder core pulling with wall thickness in the forming section, check if the hydraulic cylinder has a self-locking mechanism.

18. Ensure lifters and sliding block core pulling mechanisms have reverse ejection mechanisms for difficult-to-demold structures like ribs or pillars.

19. Verify that large sliding blocks are not positioned on the upper side of the mold installation direction. If unavoidable, check if larger springs or increased quantities are used, and core pulling distance is increased.

20. Ensure the maximum ratio of slider height to length is 1, length dimension is 1.5 times the width, and height is 2/3 of the width.

21. Verify if the slider fit length is greater than 1.5 times the slider direction length, and the length retained in the slide groove is less than 2/3 of the groove length.

22. Check if slider have 3–5-degree lead-in angles in each direction (especially left and right sides) to facilitate fitting and prevent flash. Ensure sliding distance is 2-3mm greater than core pulling distance, similar for angled ejectors.

23. For large slider (weighing over 30KG) with T-shaped guide slots, verify if removable pressure plates are used.

24. For spring-limited slider, check if spring holes are fully on the rear mold or sliding block when springs are inside; if springs are outside, ensure spring fixing screws are threaded on both ends for easy sliding block disassembly.

25. Verify if slider sliding distance is 2-3mm greater than core pulling distance; similar for lifters.

26. Ensure large slider (width exceeding 150mm) have wear plates underneath, made of T8A material, heat-treated to HRC50-55, protruding 0.05-0.1mm above the large surface, with oil grooves.

27. For large slider (width exceeding 200mm), check if locking surfaces have wear plates protruding 0.1-0.5mm with oil grooves.

28. Verify if slider pressure plates use positioning locks for alignment.

29. For slider wider than 250mm, ensure additional guide blocks are added in the middle bottom area, made of T8A material, heat-treated to HRC50-55.

30. If the product tends to stick to the front mold, check if the rear mold sidewalls have added texture or retained spark erosion texture, without deep undercuts or hand-polished undercut ribs or stippling.

31. If undercut is added to ejector pins, ensure undercut directions are consistent and easily removable from the product.

32. Verify that ejector pin blank head dimensions, including diameter and

thickness, are not arbitrarily modified or shimmed.

33. Check if ejector pin hole and fitting clearances, sealing length, and hole surface finish are machined according to relevant enterprise standards.

34. Ensure ejector pins do not move up and down easily.

35. For products that tend to follow lifter during ejection, verify if grooves or etching are added to ejector pins without affecting product appearance.

36. For pushing plate ejection, check if ejector pins have delayed ejection function to prevent whitening.

37. Ensure return pins have flat end faces without welding, and blank head bottoms have no shims or spot welds.

38. Verify if lifter clearance holes in the mold base are not too large to affect appearance.

39. Check if ejector blade fixed on ejector pins are securely fastened, with 3–5-degree slopes on non-forming sides and chamfered edges at the bottom.

40. Ensure the product is suitable for robotic removal.

41. For three-plate molds with robotic part removal, verify if limit puller bolt are arranged on both sides of the mold installation direction to prevent interference with the robot, or if external pull plates are added to the mold base.

42. For three-plate molds, check if the runner plate is guided to slide smoothly and is easily pulled open.

43. For molds with oil channel machined into the mold base, ensure iron filings are blown clean from the oil channel to prevent damage to the equipment's hydraulic system.

44. Verify if oil channel and air channels are smooth, and hydraulic ejection resets properly.

45. For robotic part removal, ensure guide pillar do not interfere with robot operation.

46. For self-made mold bases, check if one guide guide pillar is offset to prevent incorrect assembly.

47. Verify if guide bushings have venting holes at the bottom to release air when guide pillar enter.

48. Ensure DOWELS PIN are installed without clearance.

III. Cooling System:

1. Verify if cooling water channels are sufficient, unobstructed, and comply with drawing requirements.

2. Ensure sealing is without water leakage, easy to maintain, and water nozzles are installed with PTFE tape.

3. Check if a water test is conducted before trial, with 4MPa inlet pressure for 5 minutes.

4. Verify if sealing grooves for O-rings are machined according to relevant enterprise standards for dimensions and shape and

are on the mold base.

5. Ensure O-rings are lubricated with grease when installed and protrude above the mold base surface.

6. Check if water channel separators are made of corrosion-resistant materials, generally brass plates.

7. Verify if front and rear molds use centralized water routing methods.

IV. General Gating System (Excluding Hot Runner):

1. Ensure the sprue bushing surface is polished to ▽1.6.

2. Verify if runners are polished to ▽3.2 or 320# oilstone finish.

3. For three-plate molds, check if the cross-section of the sub-runner exiting on the back of the front mold plate is trapezoidal or circular.

4. For three-plate molds with runner separation on the runner plate, ensure the runner inlet diameter is less than Φ3mm, with a 3mm deep step recessed into the runner plate at the ball head.

5. Verify if the ball head puller rod is securely fixed, either pressed under the locating ring, fixed with set screws, or held by a pressure plate.

6. Ensure there is a 10-12mm gap between the ejector plate and runner plate.

7. Check if the gap between the runner plate and front mold plate is suitable for runner removal, generally gap = runner length ÷ 20-25, and greater than 120mm.

8. For three-plate molds, verify if front mold plate positioning uses limit puller bolts.

9. Ensure gates and runners are machined according to drawing dimensions using machine tools (CNC, milling machine, EDM), not hand-ground.

10. Verify if point gates are machined according to gate specifications.

11. Check if there is a small protrusion at the point gate on the front mold and a corresponding recess on the rear mold.

12. Ensure runner ends have an extended section for cold slug wells.

13. Verify if the Z-shaped undercut on the puller rod has a smooth transition.

14. Check if runners on the parting surface have circular cross-sections without misalignment between front and rear molds.

15. For submarine gates on ejector pins, ensure there is no surface shrinkage.

16. Verify if cold slug well diameters and depths for transparent products comply with design standards.

17. Ensure runners are easily removable, leaving no gate marks on the product's visible surfaces, and no residual runners on assembly areas.

18. For hook submarine gates, check if both insert parts are nitride to HV700 hardness.

V. Hot Runner System:

Verify if hot runner wiring layout is reasonable, easy to maintain, with numbered wires corresponding one-to-one.

Ensure safety tests are conducted to prevent electrical leakage and other safety hazards.

Check if the temperature control box, hot nozzles, and manifold meet customer requirements.

Verify if the main sprue bushing is connected to the manifold using threads, with a flat surface contact seal and welded seal around the perimeter.

Ensure the manifold has good contact with heating plates or heating rods. Heating plates should be fixed with screws or studs, with good surface contact and no gaps. Heating rods should have a 0.05-0.1mm fitting clearance (h7/g6) with the manifold for easy replacement and maintenance.

Check if J-type thermocouples are used and correspond to the temperature controller.

Verify if there are no dead angles for material retention at manifold end plugs to prevent material decomposition. Ensure end plug screws are tightened and welded for sealing.

Check if there is an air insulation layer of 25-40mm between the heating plate and mold plate after the manifold is installed with the heating plate.

Ensure each group of heating elements has thermocouple control, with thermocouples reasonably positioned for accurate temperature control.

Verify if hot runner nozzles have tight contact with heating bands, with minimal exposure at both ends. Check if cold material section length and nozzle are machined according to drawings, and if clearance, sealing, and positioning sections at both ends meet design requirements.

Ensure hot runner nozzle dimensions are less than Φ5mm to prevent surface shrinkage due to large runners.

Check if nozzle heads use copper or aluminum foil as sealing rings, protruding 0.5mm above the large surface. Verify if nozzle head inlet diameter is larger than manifold outlet size to prevent leakage due to thermal expansion misalignment.

Ensure the manifold has reliable positioning to account for thermal expansion, with at least two locating pins or screw fixation.

Verify if there are insulation pads between the manifold and mold plate, such as asbestos mesh or stainless steel.

Check if there are spacer blocks directly below the main sprue bushing and above each hot nozzle to ensure sealing. Spacer blocks should be made of stainless steel with poor heat conduction or use ceramic insulating washers.

If spacer blocks above hot nozzles protrude above the top plate surface, ensure they protrude 0.3mm and are within the injection machine's locating ring.

Verify if the temperature controller's set

temperature and actual displayed temperature have an error of less than ±2° C and if temperature control is sensitive.

Ensure cavities are not connected to hot nozzle mounting holes.

Check if hot runner wiring is bundled and covered with pressure plates to prevent wire damage during assembly.

If there are two identical sockets, ensure they are clearly marked to prevent incorrect plugging.

Verify if control wires have protective sleeves, are undamaged, and are generally cable wires.

Ensure the temperature control cabinet structure is reliable with no loose screws.

Check if sockets are installed on bakelite boards and do not exceed the maximum mold plate dimensions.

For pin-point hot runner, verify if the pin tips protrude from the front mold surface.

Ensure electrical wires do not protrude outside the mold.

Check if all areas where wires contact the manifold or mold plate have rounded transitions to prevent wire damage.

Verify if all manifolds and nozzles are made of P20 material.

Before mold plate assembly, ensure all circuits are free from short circuits.

Check if all wires are correctly connected and insulated.

After mold plates are clamped, verify if all circuits are rechecked with a multimeter.

VI. Molding Section, Parting Surface, Venting Grooves:

Check front and rear mold surfaces for unevenness, dents, rust marks, or other appearance-affecting defects.

Verify if inserts and mold base fit with less than 1mm gap (maximum) at four corners.

Ensure parting surfaces are clean and tidy, without hand-ground clearances, and no depressions in sealing areas.

Check if venting groove depths are less than plastic flash values (PP < 0.03mm, ABS/PS < 0.05mm), machined by machine tools without hand-grinding marks.

Verify if inserts fit properly (using different inserts to account for dimensional variations), are easily placed, and reliably positioned.

Ensure inserts, cores, etc., are reliably positioned and fixed, with rotation prevention for round parts. No copper or iron shims under inserts; if welded for spacing, welding should form large surface contact and be ground flat.

Check if the front mold is polished as required (according to contract).

Verify if front and rear mold ribs have no spark erosion marks or tool marks, and are polished as much as possible. Ensure ejector pin holes are precision reamed with no spark erosion marks or tool marks.

Check if ejector pin end faces match the core surface.

Ensure kiss-off area have a slope greater than 2 degrees to prevent burrs, with no thin-edge structures in pierced areas.

Verify if the rear mold front face has all texture, tool marks, and spark erosion marks removed with an oilstone, unless preservation is required.

Check if all mold components are numbered.

Ensure front and rear mold inserts have no undercuts, chamfers, or other defects.

Verify if deep ribs (over 15mm) are insert-assembled.

Check if rib ejection is smooth.

For multi-cavity molds with left-right symmetrical parts, ensure they are marked with L or R. Follow customer requirements for position and dimensions if specified; otherwise, add markings in areas that don't affect appearance or assembly, using 1/8" font size.

Verify if mold base parting line surface are properly machined, with more than 70% surface area in contact.

Ensure ejector pins are arranged near sidewalls and beside ribs or bosses, using larger ejector pins.

For identical parts, check if they are numbered 1, 2, 3, etc. (printed as described above).

Verify if cavities and parting surfaces are clean.

Ensure moving parts that need to meet the front mold surface, such as core pins and ejector pins, as well as small insert pillars under Φ3mm, are inserted into the front mold.

Check if all contact surfaces, insertion surfaces, and parting surfaces are clean.

Verify if parting surface sealing areas comply with design standards (10-20mm for medium and smaller molds, 30-50mm for large molds, with the rest machine-milled for clearance).

Ensure texturing and sandblasting meet customer requirements.

For products requiring etching or sandblasting, check if draft angles are 3-5 degrees or larger for deeper textures.

Verify if transparent parts have larger draft angles than general products (generally > 3° for PS, > 2° for ABS and PC).

For products with appearance requirements, ensure screw bosses have anti-shrinkage measures.

Check if holes and pillars requiring clean corners at the base in the front mold are insert-assembled in the front mold.

Verify if screw bosses deeper than 20mm use core pins.

If screw bosses have chamfers, ensure corresponding core pins and insert pillars are chamfered.

Check if product wall thickness is uniform

(within 0.15mm).

Ensure rib width is less than 60% of the visible surface wall thickness (unless specified by the customer).

Verify if cores on angled ejectors and sliding blocks have reliable fixing methods (screw tightening or insertion from the back with a blank head).

For front mold insertion into rear mold or vice versa, check if there is angled surface locking or machine-milled clearance around the perimeter.

Ensure forced ejection structures are used for transparent PS, AS, PC, PMMA, etc.

Verify if mold materials, including grade and treatment condition, comply with contract requirements.

Check if specialized numbers, date stamp, material stamp, logos, and trademarks are properly engraved. (Date stamp should follow customer requirements; if not specified, use standard components).

For transparent parts, ensure orientation markings are correctly printed.

Verify if front and rear molds for transparent parts are polished to a mirror finish.

VII. Packaging:

Check if mold cavities are sprayed with rust-preventive oil.

Ensure sliding parts are lubricated with grease.

Verify if the sprue bushing inlet is plugged with grease.

Check if mold locking plates are installed and meet design requirements (three-plate mold stripper plate fixed to the rear mold), with at least two plates.

Ensure product drawings, structure drawings, water circuit drawings, component and mold material supplier details, user manual, packing list, and electronic documents are complete.

Verify if the mold exterior is painted blue (follow contract and technical requirements for special customer requests).

Check if there is an assembly conclusion for the product.

Ensure the product is free from surface defects and refinement issues.

Verify if spare parts and wear parts are complete with a detailed list, including supplier names.

Check if there is a release form from the marketing department.

Ensure the mold is wrapped in plastic film.

For wooden crate packaging, verify if the mold name and placement direction are painted on the crate.