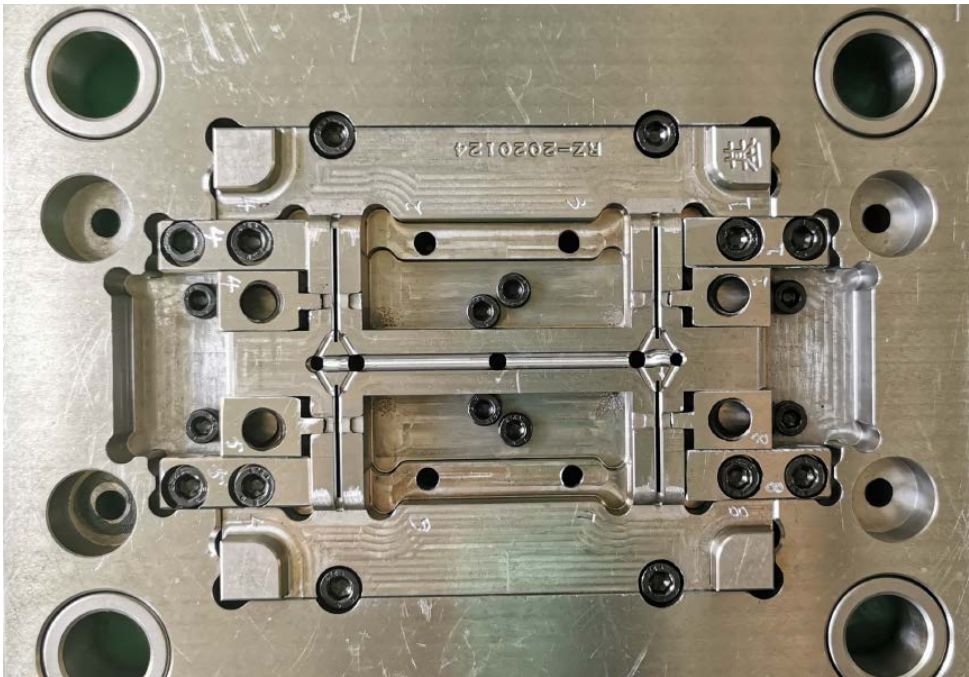


Standard for Acceptance of Mold Manufacturing

Manufacturing a set of high-end magnificent and classy mold not only needs the excellent mold design level and the precise machining process, but also needs the precise mold development concept. What is the precise the mold development concept? Many persons highly disapprove of this concept, considering why they don't have the precise concept even with the experiences of manufacturing so many molds? Actually, the mold lies not in the number of manufacturing, but in the pursuit of keep-improving details and reliable standards in mold development. The “more or less” concept is absolutely not permitted in the process.



I. Mold appearance

1. The nameplate of the mold shall be complete in content, clear in characters, and regular in arrangement.
2. The nameplate shall be fixed to the position close to the mold plate and the reference angle on the mold leg. The nameplate shall be fixed reliably, and difficult in stripping.
3. Unless otherwise specified by customers, it is necessary to select the plastic fast-plug water nozzle as the coolant water nozzle.
4. The cooling water nozzle shall not extend out of the surface of the mold base.
5. The cooling water nozzle shall be countersank, with the diameter of 25mm, 30mm, or 35mm; and the orifice is shall be chamfered evenly.
6. The coolant water nozzle shall have inlet and outlet marks.
7. The English characters and numbers of marks shall be larger than 5/6 in size, and shall be located at 10mm right under the water nozzle, which shall be legible and regular in writing, attractive in appearance, and uniform in spacing.
8. Mold accessories shall not affect the hoisting and storage of the mold. During installation, in case of any oil cylinder, water nozzle, pre-reset mechanism, and other accessories exposed below, it is necessary to arrange support legs for protection.
9. During the installation of support legs, screws shall be fixed to the mold base across the support legs, and overlong support legs can be fastened on the mold base with the lathed external threaded post.
10. The dimension of the ejection hole of the mold shall comply with the requirements of the specified injection molding machine, and it is forbidden to apply only one center ejector, except for the small-sized mold.
11. Unless otherwise specified by customers, the locating ring shall be fixed reliably, with the diameter of

100mm or 250mm; and the locating ring is 10 to 20mm higher than the base plate.

12. The boundary dimension of the mold shall comply with the requirements of the specified injection molding machine.

13. For any mold for which there are requirements in the direction of installation, it is necessary to mark the direction of installation with the arrow on the front mold plate or the rear mold plate; and the "UP" word shall be marked next to the arrow, the arrow and the word shall be yellow in color, and the word height shall be 50 mm.

14. The surface of the mold base shall be free of dents, rust, unnecessary lifting rings, incoming/outgoing stream, oil holes, and other defects that affect appearance.

15. The mold shall be convenient to hoist and transport; and during hoisting, the components and parts of the mold shall be disassembled, and the lifting ring shall not be intervened with the water nozzle, the oil cylinder, the pre-push-pack pin, etc.

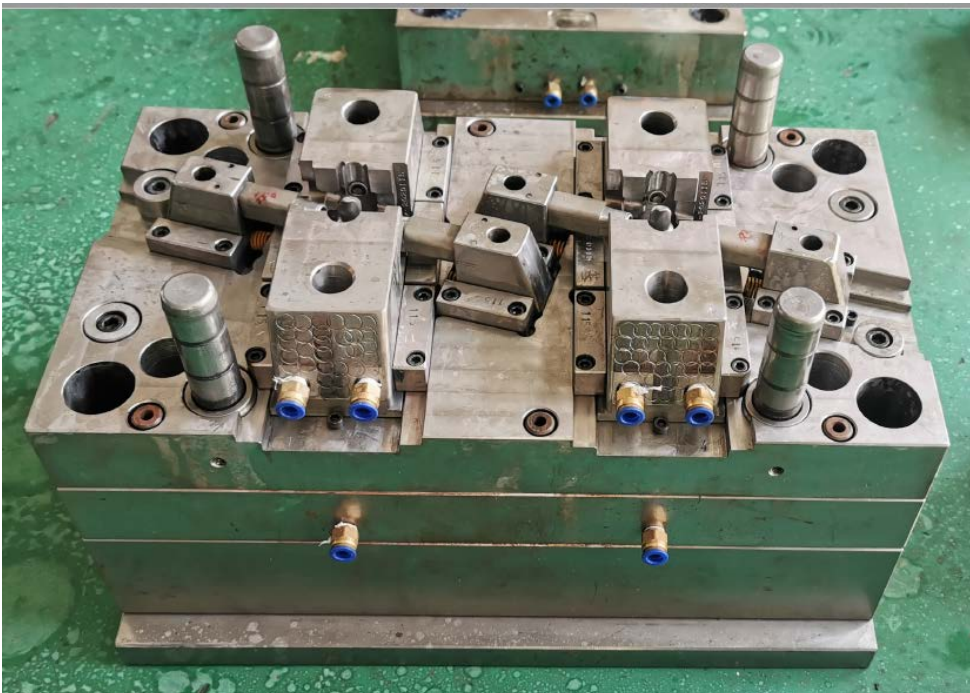
II. Materials and hardness of mold

1. The mold base shall comply with the standard.

2. The formed parts of the mold and the gating system (core, movable and fixed mold inserts, movable insert, sprue spreader, ejector pin, and sprue bush) shall be made of materials with performance higher than 40Cr.

3. During the forming of plastics that are easy-corrosive to the mold, the formed parts shall be made of corrosion-resistant materials, and it is necessary to take anti-corrosive measures for formed surfaces.

4. The hardness of the formed parts of the mold shall not be lower than 50HRC, or the hardness of surface-hardening treatment shall be higher than 600HV.



III. Ejection, return, core pulling and inserting, and taking-out

1. During ejection, it is necessary to ensure smoothness, and no clamping stagnation, and abnormal sound.

2. The surface of the lifter shall be polished, which shall be lower than the core surface.

3. The sliding component shall be provided with the oil groove, and shall be subjected to nitrogen treatment on the surface; and upon treatment, surface hardness shall be HV700 above.

4. All ejector pins shall be equipped with standstill positioning, each shall be numbered.

5. The ejection distance shall be limited by the limited block.

6. It is necessary to select the standard part as the return spring, and two ends of the spring shall not be polished and cut off.

7. It is necessary to set range limit for the slider, and the loose core, and to set spring limit for the small slider; in case of inconvenience for spring installation, ball catches can be used; and it is necessary to arrange the travel switch for the loose core of the oil cylinder.
8. Generally, the core pulling of the slider is conducted with the slider angle pin, and the angle of the slider angle pin shall be 2° to 3° smaller than that of the slider locking surface. In case of overlong travel for the slider, pulling shall be implemented by the oil cylinder.
9. When the end face of the formed part of the loose core of the oil cylinder is wrapped, the oil cylinder shall be equipped with the self-locking mechanism.
10. The wear-resisting plate shall be arranged on the lower side of the large slider with width exceeding 150 mm, which shall be made of T8A material; and upon thermal treatment, the hardness ranges from HRC50 to 55, the wear-resisting plate is 0.05 to 0.1 mm higher than the large surface, and the oil groove is formed in the slider.
11. The up-and-down leap of the ejector pin is not permitted.
12. The ejector pin is equipped with barbs, the directions of barbs shall keep consistent, and barbs shall be removed from the product.
13. Fit clearance between the ejector pin hole and the ejector pin, the length of the adhesive sealing section, and the surface roughness of the ejector pin hole shall comply with the requirements of relevant enterprise standards.
14. The product shall be convenient to take down by the operator.
15. During the ejection of the product, the project is easy to move along with the lifter, grooving or etching shall be implemented on the ejector pin.
16. The stripper bar fixed on the ejector pin shall be firm and reliable, the non-formed part around it shall have the gradient of 3° to 5° upon machining, and the lower part shall be chamfered.
17. There shall be no scrap iron, and other impurities in the oil-way hole in the mold base.
18. The end face of the push back pin shall be smooth, without spot welding. There shall be no gasket and spot welding at the bottom of the base head.
19. The sprue plate of the 3-plate mold is smooth in guiding slide, and easy to draw back.
20. The limit pull rods of the 3-plate mold shall be arranged on two sides of the mold in the direction of installation, or the pulling plate is arranged additionally outside the mold base to prevent the limit pull rods from being intervened with the operator.
21. The oil-way air passage shall be smooth, and the return of hydraulic ejection shall be ensured.
22. The exhaust port shall be formed at the bottom of the guide bushing.
23. There shall be no clearance during the installation of the positioning pin.



IV. Cooling and heating systems

1. The cooling or heating system shall be fully smooth.
2. Sealing shall be reliable, and the system shall be free of leakage and easy to overhaul under the pressure of 0.5MPa.
3. The dimension and shape of the seal groove formed in the mold base shall comply with the requirements of the relevant standards.
4. The seal ring shall, when being placed, be coated with grease, which shall be higher than the mold base surface after being placed.
5. Spacers of water and oil runners shall be made of materials that are not easy to corrode.
6. Concentrated water feeding shall be applied for cavity and core.

V. Gating system

1. During arrangement, the sprue shall not affect the appearance of the product, and shall meet the assembly requirements of the product.
2. The section and length of the runner shall be reasonable in design, that is, it is necessary to shorten the process, and reduce the sectional area to shorten filling and cooling time on the premise of ensuring the forming quality, while keeping the minimum loss in the plastics of the gating system.
3. The partial section of the branched runner of the three-plate mold on the reverse side of the front mold plate shall be in the trapezoid or semi-circular shape.
4. In case that there are breaking materials on the sprue plate of the three-plate mold, the diameter of the sprue inlet shall be smaller than 3 mm, and a 3 mm-depth step that is recessed in the sprue plate shall be arranged at the ball end.
5. The ball-end sprue puller shall be fixed reliably, which can be pressed under the locating ring, or can be fixed with grub screws, or can be pressed by the pressing plate.
6. The sprue, and the runner shall be machined as specified in drawing dimensions, and manual machining or machining with polishing machine is not permitted.
7. The pin-point gate shall comply with the requirements of the specification.
8. The front end of the branched runner shall be extended as the cold slug well.
9. The sprue puller shall keep smooth transition during Z-shaped undercutting
10. The branched runner on the parting surface shall be in the circular shape, and cavity and core shall be

free of dislocation.

11. The submarine gate on the ejector beam shall be free of surface shrinkage.

12. The diameter and depth of the cold slug well of the transparent product shall comply with the standards of design.

13. Materials are easy to remove, there is no any sprue trace for the appearance of the product, and there are no residual materials at the assembly of the product.

14. In the hooked submarine gate, two inserts shall be subjected to nitrogen treatment, and the surface hardness is up to HV700.



VI. Hot runner system

1. The wiring of the hot runner shall be reasonable in layout for easy access, and wiring numbers shall be in one-to-one correspondence.

2. The hot runner shall be subjected to the security test, and insulation resistance against ground is larger than 2MW.

3. In terms of temperature control cabinet and hot nozzle, standard parts shall be applied in the hot runner.

4. The main gate is connected with the hot runner with screw threads, and the bottom plane is in contact seal.

5. The hot runner comes in good contact with the heating plate or the heating bar, the heating plate is fixed with screws or studs, and surfaces are in a reasonably good fit.

6. The J-shaped thermocouple shall be applied, which is matched with the temperature-controlled meter.

7. Each set of heating elements shall be controlled by the thermocouple, and the thermocouple shall be reasonable in layout.

8. The nozzle shall meet the requirements of design.

9. The hot runner shall be reliable in positioning, and shall be at least provided with two locating pins, or be fixed with screws.

10. The heat insulation pad shall be arranged between the hot runner and the mold plate.

11. The error between temperature set by the temperature-controlled meter and actually displayed temperature shall be smaller than $\pm 5^{\circ}\text{C}$, and temperature control shall be sensitive.

12. The cavity and the nozzle mounting hole shall be run through.

13. The wires of the hot runner shall be bundled, which are covered with the pressing plate.

14. There are sockets with the same specification, which shall be marked clearly.

15. The control line shall be sheathed, without damage.

16. The temperature control cabinet is reliable in structure, and there is no loose connection in screws.

17. The sockets are installed on the bakelite plate, which shall not exceed the max. dimension of the mold plate.

18. The wires shall not be exposed out of the mold.
19. There shall be fillet transitions at all positions of contacting the wires on the hot runner or the mold plate.
20. Prior to the assembly of the mold plate, all lines shall be free of open circuit or short circuit.
21. All wires shall be connected correctly, and excellent in insulating property.
22. Upon the installation and clamping of the mold plate, all lines shall be checked again with the multimeter.

VII. Formed part, parting surface, and air discharge duct

1. The surfaces of cavity and core shall be free of unevenness, pits, rust, and other defects that affect appearance.
2. The insert is matched with the mold frame, and there are clearances of less than 1 mm at filleted corner around.
3. The parting surface shall keep clean and neat, and shall be free of the clearance of the hand-held grinding wheel, and there shall be no recess in the adhesive sealing section.
4. The depth of the air discharge duct shall be smaller than the flash value of plastics.
5. Inserts shall be full in grinding, smooth in placement, and reliable in location.
6. Inserts, insert cores, and other parts shall be located and fixed reliably, round parts shall be equipped with standstill locking, and copper sheets and iron sheets shall not be cushioned under inserts.
7. The end face of the ejector pin shall keep consistent with the core.
8. The formed parts of cavity and core shall be free of undercutting, chamfering, and other defects.
9. The rib is ejected smoothly
10. For products of the multi-cavity mold, unless otherwise specified by customers in locations and dimensions, left and right parts are symmetrical, and shall be marked with L or R at the position where appearance and assembly are not affected, with the word number of 1/8.
11. The mold base locking surface shall be ground fully, with more than 75% area of contact.
12. The ejector pins shall be arranged at the position close to the side wall, and next to the rib and the boss, which shall be as large as possible.
13. It is necessary to mark number of 1, 2, 3, etc. for the same parts.
14. Each kiss-off surface, shut-off surface, and parting surface shall be ground fully.
15. The adhesive sealing section of the parting surface shall comply with the standards of design. Molds with medium size and below range from 10 to 20mm, large-sized molds range from 30 to 50 mm, and the rest is machined for clearance.
16. Texture and abrasive blasting shall keep even, which meet the requirements of customers.
17. For any product with requirements on appearance, it is necessary to take shrink-proof measures for screws on the product.
18. In case of any stud with depth exceeding 20 mm, it is necessary to select the ejection pipe.
19. The wall thickness of the product shall be even, with deviation being controlled within ± 0.15 mm.
20. The width of the rib shall be less than 60% of the wall thickness of the appearance.
21. Insert cores on the lifter and the slider shall be fixed reliably.
22. Upon the inserting of cavity into core, or the inserting of core into cavity, there shall be slope locking and machining for clearance at the periphery.

VIII. Injection molding production process

1. The mold shall have the stability of injection molding production and the repeatability of correction in process parameters within the normal injection molding process range.
2. During the injection molding production of the mold, injection pressure shall be generally smaller than 85% of the rated maximum injection pressure of the injection molding machine.
3. During the injection molding production of the mold, the injection rate at the 3/4 travel shall not be lower than 10% of the rated maximum injection rate or exceed 90% of the rated maximum injection rate.
4. During the injection molding production of the mold holding pressure shall be generally smaller than

85% of the actual maximum injection pressure.

5. During the injection molding production of the mold, mold clamping force shall be smaller than 90% of the rated mold clamping force of the applicable model.

6. During injection molding production, products and regrind materials shall be easy and secure to take out (time shall not exceed 2 s).

7. In case of the mold with mold inserts, mold inserts shall be convenient to install, and reliable in fixing.

IX. Packaging and transport

1. The mold cavity shall be cleaned up and sprayed with rust-preventative oil.

2. Sliding components shall be coated with lubricating oil.

3. The feed port of the sprue bush shall be blocked with lubricating grease.

4. The mold shall be equipped with the mold lock, and the specification shall meet the requirements of design.

5. Spare parts, and vulnerable parts shall be complete, and shall be attached with the schedule and supplier names.

6. Inlets and outlets of water, liquid, gas, and power of the mold shall be sealed through sealing measures to prevent foreign matters from entering.

7. Paint shall be sprayed on the outer surface of the mold, unless otherwise specified by customers.

8. The mold shall be packaged with the damp-proof, waterproof, and bump-proof package, unless otherwise specified by customers.

9. Mold product drawings, structural drawings, drawings of cooling & heating system, hot runner drawings, details of suppliers of spare and accessory parts and mold materials, operation instruction, mold trial reports, certificate of quality for pre-delivery inspection, and electronic document shall be complete.