

QWISE-HJ-DYZDS-2019

Company Standard

Hunan WISE New Material Technology Co., Ltd.

Steel Bonded Carbide sub-factory

Large press forming process

Operating instructions

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Large press forming

1 main raw and auxiliary materials

1.1 Main raw materials: mixed materials of various grades.

1.2 Main auxiliary materials: steel mold, foam, plastic film, plastic soft mold, iron wire, stainless steel product plate.

2 major equipment and tools

2.1 Main equipment: 500 tons of Alpha press, 160 tons of hydraulic press, $\Phi 830$ mm cold isostatic press.

2.2 Main tools: electronic scales, balances, calipers, wire cutters, wrenches.

3 job quality requirements

3.1 The operation must strictly abide by the equipment safety technical regulations and operating procedures.

3.2 The compact size should meet the requirements of the “large pressure group process card”.

3.3 The appearance of the compact is non-sticky, hole, crack, falling edge, water immersion, oil immersion and so on.

3.4 Handle gently during operation to avoid vibration.

4 steps and essentials

4.1 Debugging and suppression of Alpha presses

4.1.1 Preparation for Molding

4.1.1.1 Check if the mold is normal

4.1.1.2 Clean the dust and debris of the press console.

4.1.1.3 Clean all parts of the mold with gasoline, and wipe off the rust and burrs with a fine gauze, then wipe with a rag, and finally wipe the work surface with a lint-free paper. The used gasoline is poured into the designated gasoline recovery bin.

4.1.2 Core rod

Screw one end of the wire end of the connector into the bottom plate and insert the core rod into the connector.

Management focus: The connecting piece is not tightened temporarily, so that the

position of the core rod can be adjusted after the lower punch and the negative mold are installed.

4.1.3 Mounting the punch

Insert the lower punch into the base and tighten it with screws. Put the lower punch together with the base into the core rod.

4.1.4 Mounting the negative mold

4.1.4.1 Slowly insert the female mold into the lower punch.

Management focus: Absolutely keep the negative mold from tilting, not shaking, and smoothly inserting the lower punch.

4.1.4.2 Insert the female mold fastening ring and fasten it with screws.

Management focus: When tightening the screws of the fastening ring, pay attention to the uniform force and ensure the fastening ring is compacted.

4.1.5 Check and adjust the fit of the core rod, lower punch and negative mold.

Management focus:

1 When adjusting the loading height by the left handwheel or adjusting the demoulding position by the right handwheel, the force should be uniform and the force is not shaken.

2 When adjusting the loading height, it is forbidden to separate the core rod from the female mold.

4.1.6 Mounting the punch

4.1.6.1 Load the mixture into the cavity, insert the upper punch into the negative mold, and confirm that the upper punch enters the cavity, and then press the upper head of the press to make the connection of the upper head smoothly press. Punch.

Process parameters: The upper head pressure is 50~60 tons.

Management focus: the upper head pressure can not be adjusted too much, close the upper punch lift switch.

4.1.6.2 Fasten the fastening screws of the upper punch symmetrically.

4.1.7 Fasten the lower punch base with three clamps to make it securely link to the base plate.

4.1.8 suppression

4.1.8.1 Turn on the cooling water, turn on the power, and start the pump. Manually move the upper and lower punches to confirm that the pump is working properly.

4.1.8.2 Proof electronic scales, calipers, wiping tools, check mold assembly, set dwell time.

Process parameters:

The product holding time of 10~20kg is 15~17min;

The product holding time of 20~30kg is 17~20min;

The product holding time of 30~40kg is 20~25min;

The product with a single weight of 40kg or more has a holding time of 25 minutes.

4.1.8.3 According to the “large pressure group process card”, find the

corresponding mixture and check the internal and external signs of the mixture. After confirming the correctness, weigh the mixture and press it in large quantities.

Management focus:

1 The inner and outer cards of the mixture must be the same, and the inner card is the “mixing material suppression notice” to prevent the wrong mixture.

2 The weight error of the weighed mixture shall not exceed the allowable range of the “large pressure group process card”.

3 When the upper punch enters the female cavity, the speed should be slowed down.

4.1.8.4 After the pressure is removed, the blank is carefully taken out from the press to make the mark, and the phenomenon of cracks or the like is carefully checked. After the technician judges the test, the mass production is carried out.

Management focus:

1 The machine is strictly forbidden to transfer equipment during the pressure keeping process.

2 After checking the pressing pressure, the pressure gauge should be closed in time.

4.1.9 Fill in the "large pressure group production record" and "transfer this record" in time.

4.2 Adjustment and suppression of hydraulic press

4.2.1 Preparation

4.2.1.1 According to the "large pressure process card", find the corresponding mold clean, and put the cleaned mold sleeve into the base.

Management focus: The mold sleeve should be stable when it is placed in the base to avoid collision with the base.

4.2.1.2 Adjust the upper stroke according to the height of the mold.

Management focus: Confirm the size of the stopper corresponding to the mold.

4.2.2 suppression

4.2.2.1 Turn on the cooling water, turn on the power, start the pump, and move the upper head with jog to confirm whether the press is working properly.

4.2.2.2 Proof the balance, caliper, place the corresponding weight, and wipe the tool.

4.2.2.3 Weigh the mixture for pressing according to the requirements of the “large pressure group process card”.

Process parameters:

The product with a weight of 4~8kg has a holding time of 4~8 minutes.

The product with a weight of 8~10kg has a holding time of 6~12 minutes.

The product with a single weight of 10kg or more has a holding time of 8 to 15 minutes.

Management focus:

1 The weight error of the weighed mixture is not allowed to exceed the control range of the “large pressure group process card”.

2 After the mixture is filled into the cavity, the material must be smoothed.

3 The pressure holding time must be carried out according to the "large pressure group process card".

4 The upper pressing head slows down the pressing speed after contacting the upper punch.

4.2.2.4 After the pressure holding time is reached, the pressing pressure is removed, and when the manual demoulding is performed, the compact is carefully taken out, and the blank is inspected for cracks or delamination, and then mass-produced after being judged by the technician.

4.2.3 Fill in the "large pressure group process card" and "transfer class record" in time.

4.3 Cold isostatic pressing

4.3.1 Turn on the power, start the control pump, manually remove the rack, and lift the cover.

4.3.2 Adjust the pressing pressure and choose the pressing method.

Process parameters: 120~150Mpa, hold pressure for 10min.

4.3.3 Select the appropriate soft mold according to the size of the compact and check that the plastic soft mold should be intact.

4.3.4 Cover the cut plastic film on the plastic mold base, and place the compact on the base and wrap it in plastic film. Then fix or seal with tape.

4.3.5 Cover the soft mold cover, try to eliminate the air in the soft mold, and bundle it with wire or seal.

4.3.6 Place the closed compact into the basket. The order should be in the order from bottom to top, in the order from top to bottom.

Management focus: The operation should be smooth and light, to avoid damage to the compact.

4.3.7 Place the gondola into the cylinder.

Management focus:

1 When lifting the basket, avoid collision with the cylinder edge, causing the basket to deform or tip over.

2 The liquid level of the emulsion should not exceed 5~10mm of the specified position. If it is too much, it should be taken out. If it is less, it should be added.

4.3.8 Start the press single circulation system, pressurize and hold pressure.

Management focus: During the cold isostatic pressing process, it is strictly forbidden to open the manual pressure relief valve or any conversion suppression method except for emergency situations.

4.3.9 After the pressing pressure is removed, the compact is taken out and placed on a foamed product tray or car, and the corresponding production transfer card is placed.

Process parameters: The foam thickness of the product with a weight of 20kg or less is 10~20mm; the foam thickness of the product with a weight of 20~30kg is 30~40mm; the foam thickness of the product with a single weight of 30kg or more is 40~60mm.

Management focus: When you fill in the production transfer card, you must write clearly and the content is correct.

4.3.10 Carefully check the presence or absence of cracks, falling edges, and immersion in the emulsion.

Management focus: 1 When using plastic film, prevent damage to the compact. 2 It

is strictly forbidden to start the liquid filling switch under the condition of liquid pumping. 3 After isostatic pressing, carefully check whether the compact is etched by the emulsion.

4.3.11 The burr is removed with a fine gauze paper and can only be transferred to the process after being confirmed by the craftsman.

4.3.12 Fill in the “Isostatic Pressure Production Record” and “Handover Record” in time.

4.4 Soft Mode Production

4.4.1 Formulation of soft mold: polyvinyl chloride paste resin, dioctyl phthalate + dibutyl phthalate, calcium stearate.

4.4.2 The polyvinyl chloride paste resin was dried at 70 ° C to 80 ° C for about 2 hours and sieved through a 250 μm (60 mesh) sieve.

4.4.3 Mix and mix according to the formula and let stand for about 24 hours.

Management focus: Stir well, make it fully swell, discharge gas, and make slurry.

4.4.4 Preheat the metal film in an electric oven to 160 ° C ~ 180 ° C, according to the size of the film to determine the preheating time, the general small touch preheating time is 3 ~ 5min, large mold The preheating holding time is 20~30min.

4.4.5 Pour the slurry into a female mold cavity or immerse the male mold into the slurry for picking or dipping to the desired thickness, usually between 1.5 and 2 mm.

4.4.6 Place the mold soaked in the electric oven in an electric oven and plasticize it at a temperature of 160 ° C to 180 ° C. During the plasticization period, the plasticization was observed every 5~6 minutes, and it was brownish yellow.

4.4.7 After the plasticization is completed, take it out and put it in cold water to cool. Then, the plastic mold was peeled off from the metal mold, and the holes and the trachoma were inspected for use.

Management focus: When dipping, the action should be slow and the exhaust should be sufficient. Master the timing of stripping, it is easy to deform too early, and it is difficult to peel off too late.

4.5 Mold pressure test

New molds and molds that have been repaired in the cavity must be tested with one blank before half a month of mass production. When testing, first check whether the core rod, punch and female mold of the mold are matched; check whether the test pressure blank has delamination, cracks, large burrs, etc., measure the size of the test compact, and measure the size after isostatic pressing. After the test compact is sintered according to the normal production process, the size of the sintered product is measured.

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