



How-To:

Jewelry Injection Wax Operating & Usage Guidelines

Jewelry Injection Waxes are used by jewelers worldwide as an effective, cost efficient means of producing high quality wax patterns. Even though you'll find the Ferris name on many different injection wax formulations, they all can be used by following the simple guidelines presented on this sheet.

Filling Your Wax Pot

All wax pots should be completely drained and periodically cleaned. Wax left idle for any extended period of time should be thoroughly stirred. It is recommended that wax pots be filled at the end of each day, allowing the wax to slowly attain and stabilize at your desired injection temperature.

In the event you need to refill the pot during a production run and you don't have a separate wax melter, you can fast-melt the wax at 200°F (93°C). Make sure to take wax temperature readings at the inside wall of your pot while stirring lightly to eliminate air bubbles. This stirring action will also help to evenly distribute heat throughout the wax. If trapped air is still present, it also helpful to spray the surface with silicone mold release agent. This will reduce surface tension and allow any trapped bubbles to break.

Once the wax has reached proper injection temperature and before pressurizing your pot, let the wax settle for a short while to permit any remaining air bubbles to escape.

Wax Pot Operation

The majority of wax pots in operation today rely on conduction to heat wax from the inside walls of the pot towards the center. Consequently, wax in contact with the walls is exposed to higher temperatures.

The properties of all injection waxes are diminished by high temperatures and excessive on/off melting cycles. For these reasons, it is recommended that wax pots be kept on continuously at your chosen injection temperature setting. This will keep the wax at a constant and even overall temperature, and will eliminate cool-down/heat-up cycles that can accelerate the degradation of wax properties.

Injection Pressure

Always inject molds at the lowest possible pressure setting (typical injection pressures range from 2-10 PSI). This will eliminate or minimize flashing and mold lines, greatly reduce clean up time, and will ensure similar pieces are the same weight. Other savings include reduced metal loss and faster finishing. Remember to clear the nozzle before starting injections. This will balance the nozzle temperature and promote a more efficient wax flow into the mold.



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Wax Temperature

We suggest purchasing a separate testing thermometer that is accurately calibrated. The secret to consistent injection is monitoring & reproducing the same temperature every time you inject. Most thermometers built into wax injection pots read temperature inside a hollow, air filled metal sleeve located somewhere near the center of the pot. While this provides some idea of temperatures inside the pot, it is not nearly as accurate as taking the actual wax temperature by submersing a separate testing thermometer into the wax.

Remember that by its very nature, wax is a great insulator. Therefore, before an accurate wax temperature reading can be taken, all the wax in the pot must be allowed to achieve a fairly overall, even temperature. This should be accomplished by leaving the wax pot on continuously at the appropriate injection temperature setting. Only then can a truly accurate temperature be taken directly in the wax with your separate thermometer.

You may notice a temperature reading differential from between 4 to 8 degrees depending upon the pot's thermometer location versus your testing thermometer. Make note of this difference for future reference. Taking into consideration all factors that will affect the injection of wax such as thermometer accuracy, drafts, proximity of air conditioning vents, etc., set the temperature controller to the lowest possible recommended setting for your particular wax.

To obtain optimum results, you should "tweak" the wax temperature one degree at a time, bringing it down to the coolest injection temperature possible. Be sure to allow at least one hour soak time between tests to permit the wax to fully stabilize at the new temperature setting.

Proper Pattern & Wax Storage

After injection, all waxes go through a crystallization process which takes approximately 24 hours. After this time period, the wax has "matured" and its properties are stabilized.

Wax patterns and unused bulk wax should be stored in closed containers at normal room temperatures, away from direct sunlight and sources of heat.

Remember, keeping your injection wax clean and fresh will ensure that you obtain maximum results from every batch.



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Nightly Shutdown

No matter what size your manufacturing operation, it is suggested that you incorporate three important routines into your nightly shutdown procedures. These include:

- Always releasing the air pressure
- Filling your pot with fresh wax
- Checking to be sure your wax pot is left on

Some injector operators turn the wax pot thermostat off at shutdown, then turn it on high each morning to quickly melt the wax. This practice is not recommended because:

- It poses a serious risk of accidental burns to the operator
- It consumes/dissipates wax ingredients which are critical to maintaining the original properties of the wax
- Wax injected at higher than recommended temperatures can cause excessive pattern shrinkage
- It diminishes or eliminates the glossy surface finish on patterns, resulting in rougher castings and increased finish work

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