

How to Hatch Chicken and Quail Eggs

A CAROLINA™ CareSheet

Set up and operate your incubator for 1 week prior to the arrival of your eggs. This allows time to monitor the incubator and determine if it is operating properly.

Note: *In this CareSheet, “chick” refers to young chickens, ducks, and quails. Information about ducks or quails that differs from that for chickens appears immediately after the information about chickens. Please follow the instructions for your specific type of eggs.*

Immediate Care and Handling

Open the shipping container and remove the eggs in their protective packaging. Inspect the eggs and ensure that they are undamaged.

Using the date you place the eggs into the incubator as day 0, determine the approximate hatch date. If students will be out on the expected hatch day, consider holding the eggs a day or 2 before beginning incubation. You can hold eggs for a maximum 3 or 4 days at 50 to 60° F (10 to 15.5° C); however, this may reduce the viability of your eggs. Stored eggs need turning over at least once each day.

Approximate incubation times are as follows:

Product Number	Egg Type	Days to Hatching
139290	Chicken	21
139440	Duck	26
139329	Coturnix Quail	17
139327	Button Quail	16

Selecting an Incubator

Many different egg incubators are available. For schools, we recommend Carolina’s Still-Air Picture Window Incubator Set (item #[701194C](#)) or other incubator equipped with an automatic egg turner and a fan. If you use an incubator without an egg turner, you must hand-turn the eggs at least 3 times daily, including weekends. Some teachers report that they skipped the weekend egg turning, but doing so risks

the birds' health. **Note:** *Not turning eggs may result in deformed chicks or failure to hatch.* The automatic egg turner holds eggs closer to the heating elements, restricting air circulation and creating heat zones, so you need a fan to prevent eggs from overheating. If you have an older Still-Air Incubator (item [#701194](#)) without an egg turner or fan, these are available as replacement parts (item [#701191A](#) and [#701191B](#), respectively). Some incubators require optional inserts for the egg turner to accommodate quail eggs. Other incubators may not have this option. Our item [#701194C](#) comes equipped with the optional inserts for quail eggs.

Incubating Eggs

Note: *The following are general guidelines. It is essential that you follow the instructions for your particular incubator. The factors critical to success are temperature, humidity, ventilation, and egg turning.*

Maintaining temperature

Maintain the incubator temperature at 100° F (38° C) with an acceptable range of 97 to 102° F (36 to 39° C). **Note:** *Do not use an incubator that will not regulate to remain below 103° (39° C). Temperatures above 103° will damage the embryos.* Check your thermometer to be certain it reads correctly. Placed in ice water, it should drop to 32° F (0° C). Often the temperature in an incubator will increase after several days of incubation. Watch for this and lower the thermostat as needed. See additional information in the "Ventilating" section below.

Maintaining humidity

Humidity must be high. If your incubator is equipped with an instrument for measuring humidity, we recommend 60% (65 to 70% for ducks). You must keep the incubator's troughs or other water containers filled in order to maintain humidity. Most incubators are equipped with vents that you can open or close to help control humidity.

Ventilating

As embryos develop, their metabolism increases and they need more oxygen. You can often detect this by an increase in temperature due to the heat generated by the embryos. Around day 4 or 5, open a vent on the incubator to provide more airflow. Some electronically controlled incubators do this

automatically. Open additional vents as needed. Some incubators require that all vents be open in preparation for hatching. Refer to the instructions sent with your incubator for specific recommendations.

Egg turning

Note: *Eggs must be turned from side to side to prevent the developing chick from adhering to membranes inside the egg; otherwise, the chick may be unable to hatch or may be deformed.* If your incubator is equipped with an egg turner, check it for proper operation. Our Automatic Egg Turner (item [#701191A](#)) does not turn the eggs completely over; it slowly tilts the eggs over to the right and then back to the left in a 4-hour cycle. If your incubator is not equipped with an egg turner, you must manually turn the eggs at least 3 times per day. Always turn them an odd number of times so that they do not rest on the same side each night. Use a pencil to mark an “X” on 1 side of each egg and an “O” on the opposite side. This helps ensure that you alternate sides when egg turning, which you should do upon arrival at school in the morning, at midday, and last thing before leaving.

Place the eggs into your incubator. **Note:** *The eggs must be on their sides or placed in the egg turner, pointed end down. There is an air cell in the rounded end of the egg. The chick orients its head to this air cell when hatching. If the air cell is down, the chick may drown.* Typically, the temperature of your incubator drops a few degrees upon introduction of the eggs. Don't try to compensate by changing the setting of the thermostat. The temperature should slowly rise to the previous level as the eggs warm. Once begun, **do not** interrupt incubation. Check the temperature several times daily and keep water reservoirs filled to provide proper humidity. Be diligent turning the eggs.

Hatching

Stop turning the eggs 3 days before their expected hatch date and prepare the incubator for hatching. For the Still-Air Incubator, this involves removing the Automatic Egg Turner and placing the eggs on the screen liner in the bottom of the incubator. However, follow the instructions specific to your incubator. Most instructions recommend increasing the amount of water in the incubator to raise humidity and opening vents to provide more airflow. Prepare a brooder to receive the chicks upon hatching.

Hatching is indicated by the chick pipping (breaking) a small hole in the shell. Once you note pipping, **do not open the incubator** unless absolutely necessary because of heat loss. It is important that the

incubator maintain a constant temperature during hatching. After initial pipping, the chick may rest several hours before continuing to chip away at the shell, so be patient. **Note:** *Resist the urge to “help” a chick hatch. It must complete the process to strengthen its body. Otherwise, it will be too weak to live.*

Once the chick resumes chipping away the shell, it may take an additional 2 to 5 hours to complete hatching. The newly hatched chicks are wet and exhausted. Leave them in the incubator until they are dry and fluffy. Don't be in a rush: Freshly hatched chicks live on egg yolk stored in their bodies and can go up to 3 days without food or water. To prevent heat loss, remove dry chicks from the incubator only once per day—taking out broken eggshells at the same time. Newly hatched chicks cannot maintain their body temperature, so transfer them to a brooder. Eggs not pipped within 24 hours of the first chick's hatching are probably infertile or the embryos are dead. Remove and discard them. **Note:** *After taking out the last chick, give the incubator a good cleaning with detergent and water and dry before storing.*

Brooding

Using a brooder, such as our Chicken and Quail Brooder (item [#701230](#)), specifically designed for that purpose is the safest way of brooding chicks. You can also make a brooder sufficient for occasional use; however, seriously consider the associated fire and electrical safety issues. A light bulb in a coffee can suspended over a cardboard box may work—or it may burn down your school or electrocute you. A better choice is a 20-gallon, all-glass aquarium tank or similar fire-resistant container, a lamp, and bulbs of different wattages (60, 75, 100, etc.). Line the bottom of the tank with paper towel to help with cleanup. You can position a gooseneck lamp outside the tank. Safer still is a fixture with a porcelain socket and wire guard such as our Brooder Lamp (item [#701202](#)) or Deluxe Porcelain Lamp (item [#674408](#)). Place a brick in 1 end of the tank and position the lamp so that it shines down on the brick. Light from the lamp warms the brick, which radiates heat, creating a heat gradient along the bottom of the tank. Chicks can move toward or away from the heat to find a preferred temperature. Regulate the temperature on the surface of the brick to 95° F (35° C). The chicks' behavior indicates if you have the correct temperature range. Too low and they cluster together. Too high and they stand apart with their beaks open. Reduce the temperature by 5° F (3° C) each week. Equip the brooder with food and water using equipment such as our Chick Feeding Set (item [#139315](#)) or Quail Feeding Set (item [#139338](#)).

Note: *Never allow the chicks to run low on food or water.*

FAQs

What is egg candling?

Candling is a fun and highly recommended activity. Candling requires a lamp that emits a narrow beam of light. Our LED Egg Candler (item #701250) is a good choice. In a darkened room, place the round end of an egg against the candler so that the beam of light passes through the egg. You can now examine the contents of the egg without breaking it open. By the 4th or 5th day of incubation, the contents of a fertile egg should appear pinkish and may have a cloudy area, which is the embryo. Eggs that show no development after 10 days are infertile or the embryo is dead; remove these eggs from the incubator and discard them.

Our eggs showed developing embryos but never hatched. What was wrong?

The most likely cause is that the temperature got too high. It doesn't have to remain above 103° F (39° C) for long to damage the embryos. Less likely, the temperature got too low, delaying development beyond the expected hatch date. Not turning the eggs, lack of proper humidity, and lack of appropriate ventilation are other possible causes.

It is past the hatch date and none of the eggs are pipped.

The incubation temperature was too low, perhaps from an incorrect setting or from opening the incubator too often. Eggs not pipped by 3 days after the expected hatch date are unlikely to hatch. It is also possible that the incubation temperature was too high, killing or damaging all the embryos.

Problems? We hope not, but if so contact us. We want you to have a good experience.

Orders and replacements: 1-800-334-5551, then select Customer Service.

Technical Support and Questions: caresheets@carolina.com



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