

# Penguin



Learn fascinating facts about penguins. Read about the different types of penguins and what they can do. Learn about and create models of a Rockhopper, Emperor, African, and King penguins, for display.



Skulduggery, Inc.

**PENGUIN CASTING KIT**

# Penguin

**Read directions thoroughly before starting.**

This Eyewitness kit is a fascinating, educational and creative introduction to penguins. The Rockhopper, Emperor, African, and King are four intriguing penguins that peek the interest of people around the world. Discover how these birds live in the wild. Learn about their individual habits and life cycles. Cast and paint the bodies of each of these birds. Add magnets to each cast for display on any metal surface. With additional casting material, unlimited casts can be made for gifts for friends and family.

## **MATERIALS PROVIDED**

- Information about Rockhopper, Emperor, African, and King penguins.
- Casting (PerfectCast) material to make casts of the penguins. To make additional animals, PerfectCast is available from your local retailer.
- 2 mold trays containing the animal family.
- Instructions explaining how to use the mold trays.
- Paints and paint brush with which to finish each cast.
- Magnets and glue used to attach birds.
- Bibliography.

## **MATERIALS NEEDED**

- Disposable container to mix PerfectCast. A can or paper cup will work nicely.
- Mixing utensil.

**Adult supervision suggested**

**WARNING:** Don't place hand in casting material while it is hardening. Don't pour excess material into drain or toilet bowl. Dispose of excess material in garbage.

# INSTRUCTIONS

Find an area with a flat, level, stable working surface, such as a counter-top, desktop or table. Make sure the surface is waterproof; some excess water may spill out of your container. Use a disposable container to mix the PerfectCast and water.

1. Place the mold tray on a flat, stable surface.
2. In a disposable container, mix PerfectCast using a ratio (by volume) of 1 part cold water to 3 parts PerfectCast. *See tip below for suggestion on estimating the amount of PerfectCast to use for your cast.*
3. Stir the PerfectCast/water mixture with a spoon or mixing stick until it is evenly mixed (about 1½ minutes). Tap the container on the table several times to remove air bubbles. There should be no lumps.
4. Pour the PerfectCast mixture into the mold. Tap the mold on the work surface to remove the remaining bubbles.

**WARNING: Do not pour excess material into the drain or toilet bowl. Dispose of excess materials in the garbage.**

5. Let PerfectCast set for 30 to 40 minutes. If the object is delicate, allow at least one hour before demolding.
6. After the mixture hardens, carefully press each part out of the mold. If a section should break, use glue to repair it or cast additional sections.
7. Read the information about dolphins.
8. Let casts dry for 2 hours before painting. Consult color suggestions for painting the casts. Separate the paint pots from each other with sissors before painting. Your kit comes with one of two possible assortments of paint colors. One assortment includes an attached glue pot labeled GL, the other assortment has a separate glue packet.  
Adding a small amount of water to the paint will thin it for easier application as well as insure enough paint to cover the complete item.
9. Using the guide in the back of this booklet, glue the magnets on your casts or glue the casts on a background of your choice.

Tip: How to measure the volume of the objects to be cast.

If you have purchased additional PerfectCast or don't want to mix all the PerfectCast included in your kit, follow the instructions below to determine how much PerfectCast to mix.

Fill all the cavities you intend to cast with water and pour into a measuring cup. This is the total volume of the finished casts.

For each fluid ounce needed, mix 1½ fluid ounces of PerfectCast and ½ fluid ounce of water. The mixture should have a consistency of a runny milkshake or melted ice cream.

# PENGUINS

The penguin is a flightless bird that lives in the southern hemisphere. There are 17 different species of penguins. Some species live in very cold climates while others can live in the warmth of tropical climates. They vary in size from the two pound, 16 inch little Blue Penguin to the 80 pound, 51 inch Emperor Penguin. All penguins are at home in the ocean.

The penguin's physique is best suited for swimming. Its body is wedge-shaped, like a boat. They are propelled through the water by their flipper shaped wings and use their tails and feet to steer. They can swim up to 15 miles per hour. They are speedy in the water but are quite awkward on land. Their short legs are located toward the back of their bodies causing them to waddle when they walk.

Many penguins swim in very cold nutrient rich waters. They dive far below the surface of the water and ice to find fish on which to feed. Penguins have soft, flexible bristles on their tongues and the roofs of their mouths to keep slippery fish from wiggling away. To survive in the very cold water, penguin's feathers have special features to keep them insulated against the very cold weather. The downy base of each feather traps an insulating layer of air against the bird's skin. The tips of the feathers overlap to form a waterproof outer coat. When penguins preen (to trim with the beak) they spread oil from a gland at the base of their tail to waterproof their feathers.

Penguins have a layer of fat to insulate them from the cold. Typically, in the colder climate, the penguins are fatter.

The coloring of their feathers provides the ability to regulate their temperature. When it is very cold, a penguin will turn its black back to the sun. The color black absorbs and holds the heat. When the weather is warmer the penguins will face the sun so that their white front deflects the sun. Also their coloring makes it harder for predators to see them in the ocean. Looking down it is hard to see its dark back against the dark depths below; looking up, it is hard to see its white belly against the sunlit surface.

Penguins are social animals. They gather in colonies of hundreds, sometimes thousands of individuals. Penguins form strong bonds with their mates. Both sexes take turns at incubating eggs and feeding the young. The father finds food for the mother while she is sitting on the nest. He also takes his turn sitting on the nest. When the chick is born, one parent will go off to find food while the other stays to protect the chick. To feed the chick the parent will eat food and then regurgitate partially digested food into the chick's mouth. A young chick has a coat of soft down feathers. When the chick grows its feathers and sheds its downy coat, he is then ready to enter the sea to find his own food.

Penguins grow new feathers every year. The process of growing new feathers is called "moulting". This process usually happens after the nesting season. It takes several weeks to complete the moult during which time the penguins must stay onshore until the moulting is complete.

The penguins featured in this Eyewitness Kit are the Emperor Penguin, the King Penguin, the African Penguin formerly known as Black Footed or Jackass Penguin, and the Rockhopper Penguin.

## **EMPEROR PENGUIN**

Emperor Penguins live in the very cold climate of the Antarctic continent. There are approximately 200,000 pairs living in that icy location.

The Emperor Penguin is the largest of all the penguin species. Adults can grow to 40 inches tall and weigh up to 88 pounds. They have relatively large blackish-blue head with large white and yellow ear patches. Their backs and flippers are dark gray while their breasts are mostly white with pale yellow at the neck. They have longer feathers, shorter beaks, and shorter flippers than other species in order to minimize heat loss.

The Emperor penguin is the only Antarctic bird that breeds in the winter. Winter season in the Antarctic is spring and summer in the continents above the equator. In May, the female Emperors gather into breeding colonies early in winter, shortly after the sea ice is formed. The male will faithfully look for his mate from the previous year. After 63 days the female lays a single egg. She then, very carefully, places the egg on the male's feet. The male has a thick fold of skin that hangs from his belly. The egg is kept warm under this fold. While the male incubates the egg, the female will travel many miles to feed in the fish filled waters in the north. To keep warm the male penguins huddle closely together to shelter each other from the frigid temperatures. After six to eight weeks the female returns in time to feed the hatched chick and relieve the male from his incubation duty. The male then travels to the open sea to eat. After several weeks he will return to help the female care for the chick. The chick is fully grown at 6 months which is the beginning of the summer season the Antarctic. This is the time that all the penguins return to the sea.

Emperor penguins eat fish, squid and crustaceans caught during deep dives. They can dive to 700 feet and stay submerged for as much as 18 minutes.

## **KING PENGUIN**

King penguin are the second largest penguin, second only to the Emperor penguins. They grow to be 30 inches tall and can weigh from 20 to 30 pounds. They live on the barren coasts of the sub-Antarctic Islands; the Falkland, Macquarie, Heard, Iles Crozet and Marion islands.

Their colors are very similar to the Emperor but have striking ear patches of bright orange and an orange coloring on their upper breast area. They have more slender bodies and longer beaks than the Emperor.

King penguins gather in colonies on beaches and valleys that are free from ice and snow. They have a rather long breeding season and eggs can be laid anytime in the Antarctic summer, from November to April. Both parents share in the incubation of the egg which takes approximately five weeks to hatch. King chicks are covered with a brown furry coat of down. The parents both provide food for the chicks. While the parents go to find food, the chicks will huddle together for protection and warmth in groups called 'crèches' or nurseries. The chicks huddle together through the winter months. As spring approaches the chicks start to grow adult feathers and are ready to go off on their own. Raising a chick usually takes between 10 and 13 months.

King penguins feed on small fish and squid, krill, and plankton. Their dives for food sometime last for 15 minutes or more.

## **ROCKHOPPER PENGUIN**

The Rockhopper Penguin is the smallest of crested penguins. They grow to 21 inches and can weigh up to 6 pounds. They are named Rockhoppers because they hop over rocks and crevices on the shores where they live. They live in the sub-Antarctic on the islands of the Falklands, the Macquarie, Campbell Island, Tristan da Cunha, and the Antipodes.

These penguins have a distinctive crest of black spiked feathers on their heads. They have a bright orange-red, short bulbous bill and tiny blood red eyes. They have vivid yellow feathers along the sides of the brow. Their legs and feet are pink. Like all penguins, their under parts are mostly white, while the upper parts are blue-black.

Rockhoppers build their nests by scraping a hole in the ground amongst the tumbled boulders, and line them with dried grasses. The nests are usually built close to natural springs because they drink and bathe in fresh water. They not only return to the same nesting place every year but also use the same nest that they had built in previous years.

The female lays two eggs. The first egg is smaller than the second. The chick from the larger egg is more apt to survive and thrive. Incubation of the eggs takes about 33 days. In the beginning both parents tend the nest. Then the male goes to the sea to feed while the female protects the nest. The male then comes back to allow the female to go eat. The male remains on the nest until the eggs hatch. He continues to care for the chicks while the female brings food for them. The chicks leave the nest at about 10 weeks.

Rockhoppers are very aggressive birds when protecting their chicks. They show very little fear of people, or of birds and animals larger than themselves.

Rockhoppers feed mostly on various small fish. They do not dive very deep to catch their meals.

This penguin's average life span is 10 years.

## **AFRICAN PENGUINS**

African Penguins live and breed on the coast and offshore islands of South Africa. African penguins grow to be about 18-20 inches tall, weighing up 7 pounds.

They have black coloring on their backs, faces, flippers and the top of their heads. The white chest is speckled with black spots. They have a broad band of black in the shape of an upside-down horseshoe on their fronts. There is whitish bare skin around their eyes that becomes bright pink in very hot conditions.

African Penguins nest in burrows in the sand, under overhanging rocks, and under bushes. They usually breed with the same mate and in the same location year after year. The female will lay two eggs but is not common for both chicks to survive. Incubation of the eggs takes up to 40 days and the male and female take turns in the process. Both parents continue to care for the chick until they are about 30 days old. At this time the chicks are left alone and the parents go out to sea to eat. The chicks are ready to go off to sea after they grow their adult feathers, after 130 days.

African Penguins are very shallow divers. They hunt for small fish like anchovies and pilchard. They often "porpoise" which means they plunge in and out of the water while they are traveling forward. They can stay under

water for over two minutes.

African Penguins are also known as Black Footed Penguins, because of their black feet, or the Jackass Penguin because they make a braying sound.

### Finishing guide and cutting guide for magnets

Experiment with mixing paints for desired color. Add a small amount of water to make the paint go further and the application easier.

#### Rockhopper Color Suggestion

Black spiked feathers on their heads; bright orange-red bill and red eyes. Yellow feathers along the sides of the brow. Their legs and feet are pink. Under parts are mostly white, the upper parts are blue-black.



#### Emperor Color Suggestion

Blackish-blue head with large white and yellow ear patches. Their backs and flippers are dark gray while their breasts are mostly white with pale yellow at the neck.



#### African Color Suggestion

Black coloring on their backs, faces, flippers and the top of their heads. The white chest is speckled with black spots. They have a broad band of black in the shape of an upside-down horseshoe on their fronts. There is whitish bare skin around their eyes that becomes bright pink in very hot conditions.



#### King Color Suggestion

Their colors are very similar to the Emperor but have striking ear patches of bright orange and an orange coloring on their upper breast area



#### Chick Color Suggestion

Brown



#### IMPORTANT NOTE:

The non-grooved side of the magnet is the side that is most strongly attracted to metal. Magnets should be cut into five pieces. The following chart indicates how to cut the magnets. Remember to glue the grooved side of the magnet (when in doubt test on metal) to the penguins.

Rockhopper	2½
Emperor	2½
African	2½
King	2½
Chick	2

## SUGGESTED READING

Love, John (1997) *Penguins*, Worldlife Library.

Chester, Jonathon (2001) *The nature of penguins*, Celestial Arts.

Chester, Jonathan (1996) *World of the penguin*, Sierra Club Books.

Lynch, Wayne (1997) *Penguins of the world*, Firefly Books.

Davis, Lloyd S. (2003) *Penguins*, Yale University Press.

Spilsbury, Louise (2006) *Watching penguins in Antarctica*, Heinemann Library.

## COLOR MIXING GUIDE

Kits come with different sets of colors depending on the title of the kit. Mixing instructions may include colors not included in your kit.

Acrylic paints can be thinned with water if they get too thick. Be sure to clean brushes with soap and water before the paint hardens or the paint will become permanent.

Primary colors can be mixed to obtain many other colors. Mix a small amount of two or more colors on a non-absorbent surface.

Always begin with more of the lighter color and a small amount of the darker color. To darken or lighten colors, add small amounts of black, brown or white and mix. Take your time and allow the paint to mix thoroughly before adding more paint.

- White skin - add small amounts of red and yellow to white
- Black/brown skin - add small amounts of white, yellow, red & black
- Army green - mix blue and yellow and a small amount of black
- Ammonite green - mix blue and yellow and a small amount of white
- Carmel - mix small amounts of brown and yellow to white
- Tan or beige - add small amounts of red, brown and yellow to white
- Brown - mix black, yellow, red and green
- Orange - add small amounts of red with yellow
- Gray - mix small amounts of black with white
- Pink - mix small amounts of red with white
- Purple - mix red and blue
- Gold - mix small amounts of yellow with silver
- The pot labeled GL is glue
- Some kits come with a pot labeled ST. This is stain that can be used to antique your creation after painting. Paint on and wipe off.

Download other Kit brochures at: <http://skullduggery.com>

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