

# CHOCOLATE: BEAN TO BAR



## ON THE FARM

Chocolate bars start out as beans from the *theobroma cacao* tree.

Cacao trees grow **20°** north and south of the equator.

Approximately **70%** of the world's crop of cocoa beans comes from West Africa.

It takes **5-8** years for a tree to reach maturity and grow usable pods.

These pods each contain **20-50** beans which are coated in a white fruit, called mucilage.

The pods are harvested by hand

**2** times a year, then left for a few days to cure before being split open, also by hand.

Once removed from the pods, the beans, coated in mucilage, are placed in heaps or boxes to ferment. Over several days, the bacteria and yeasts which were naturally present on the pods go to work on the beans.

Next the beans are dried. This is most often done by spreading the fermented beans out in the sun. This step removes water so that the beans can be safely transported without spoiling.



The beans are put onto the holds of boats and shipped to the United States.



Fermentation is a very important step in turning cocoa beans into chocolate. It helps to remove the mucilage from around the beans, kills the bean so that it cannot germinate, and allows for enzymatic reactions necessary for flavor development.



## IN THE FACTORY

### Roasting

Once the beans reach a chocolate factory, they are cleaned to remove any foreign material, then they are roasted. Roasting makes the beans safe to eat by killing any bacteria on them. More importantly, roasting is essential to flavor development.

### Winnowing

Once they are roasted, the beans are winnowed. "Winnowing" refers to the process in which the beans are cracked and the inedible shell portion of the bean is removed, leaving only the edible portion, or nib.

### Grinding

The next step is grinding the nibs into chocolate liquor. Grinding releases the fat naturally present in the cocoa beans, known as cocoa butter. The heat generated in the process liquefies this fat. While warm, chocolate liquor remains a liquid.

### Pressing

At this point, the liquor may be pressed. Pressing separates the cocoa butter from the cocoa solids, creating cocoa powder. Cocoa powder is made from grinding the resulting cake, and contains about 10-12% fat. The pressing process results in approximately equal portions of cocoa powder and cocoa butter.

### Refining

Now that the liquor has been ground, sugar and dried milk (in the case of milk chocolate) are added. This resulting paste is refined, which crushes all the pieces into small uniform particles.

### Conching

It now goes to the conche. Here additional cocoa butter is added, as well as lecithin and flavor. The product is kept warm and mixed or kneaded for several hours. This is known as conching, and important step in improving the eating quality of chocolate. It allows any off flavors to be released. It also distributes the cocoa butter evenly between all of the particles, which gives the chocolate a smoother, creamier mouthfeel.

### Tempering

Tempering means heating and cooling the chocolate to specific temperatures in order to promote correct crystal formation. This is essential so that once the chocolate is formed it is smooth and shiny. Then it is deposited into bars.

### Did You Know?

Cocoa powder is used in many applications, including beverages, bakery items, and compound coatings.

Cocoa butter can be used in beauty and pharmaceutical products, and is used to make white chocolate.

White chocolate contains no cocoa mass, only cocoa butter which is combined with milk, sugar, vanilla, and lecithin (an emulsifier).

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