



### THE COCOA POD

The fruit of the cocoa tree is a **cocoa pod** – this pod is in Ecuador. The **cocoa pods** grow right out of the tree trunk, and turn yellow or red when they are ripe and ready for harvest.



### HARVESTING THE COCOA PODS

To **harvest** the pods, a farmer uses a sharp tool to cut the pod off the tree. Sometimes the ripe pods are very high up on the tree, so he or she needs a very long tool or has to climb the tree to reach them!



### SPLITTING THE COCOA POD

The farmer carefully uses a sharp tool to split open the pods to find the beans inside. Each pod contains about 40 **cocoa beans** that are used to make chocolate! The beans are covered in a soft, sweet juicy white layer – that tastes nothing like chocolate! The beans are scooped out of the pods.



### **FERMENTING THE CACAO BEANS**

The beans are left in a pile under banana leaves for a few days. This helps them ferment, lose the fruity layer, and just start to develop the taste of chocolate.



### **DRYING THE CACAO BEANS**

The beans are laid out in the hot sun to dry. They are getting brownish – more like the color of chocolate each day! The beans have to be turned and spread around so that they dry evenly – more work to the process of turning beans to chocolate! The process and even the kind of cocoa trees are a bit different from region to region, the chocolate tastes a little bit different too!



### **SORTING THE COCOA BEANS**

The cocoa beans have to be sorted, to take away any beans that are damaged or might add a bad taste to the chocolate.



### **BAGGING UP THE COCOA BEANS**

Once they are just dry enough, the cocoa beans have to be packed up into big cloth sacks. The sacks of cocoa beans are labeled with the name of the place the beans were grown. The sacks of cocoa beans are weighed to make sure they meet the standard weight for a sack of beans – one hundred pounds!



### **TRANSPORTING THE COCOA BEANS**

The sacks of cocoa beans may be brought to the ship at the port using trucks and buses of all kinds! The sacks of cocoa beans are packed on to big cargo ships that travel the oceans! Sacks of cocoa beans arrive at the Chocolate factory.



### **CLEANING THE CACAO BEANS**

Cocoa beans are sampled and analyzed to ensure they meet specifications before going through a cleaning process to remove physical impurities.



### **DRYING, BREAKING AND WINNOWING THE CACAO BEANS**

After the cocoa beans have been cleaned, they are passed through dryers to remove extra water. The cocoa beans are then heated to break and loosen the shell from the nib. The shells are then cracked between rollers, and winnowed away using currents of air. Shell content is kept as low as possible to prevent the shell content from harming the quality, flavor and microbiological content of the finished products. The nibs are then stored in nib silos to await further processing.



### **ROASTING, GRINDING AND REFINING**

All cocoa nibs go through roasting to destroy pathogens and further develop flavor. The roasted nibs are ground into a paste called cocoa liquor. The cocoa liquor is passed through sieves and over strong magnets to remove any remaining coarse cocoa or metal particles.



### **PRESSING AND PULVERIZING**

After heat treatment, cocoa liquor is pressed by high pressure hydraulic presses. Cocoa butter is squeezed out of the cocoa liquor and is collected separately. The solid residue that remains is cocoa cake. The cocoa cake is then ground into cocoa powder.



### **MAKING CHOCOLATE**

Manufacturers blend unpressed liquor with condensed milk, sugar, and extra cocoa butter to form chocolate. The extra cocoa butter keeps the chocolate solid at room temperature. The raw mixture of milk, liquor, sugar, and cocoa butter is churned until it becomes a coarse, brown powder called “crumb.” Next, the chocolate crumb mixture goes through a series of steel rollers stacked on top of one another. These break down the tiny particles of milk, cocoa, and sugar within the crumb. Manufacturers must be careful—if they don’t crush this mixture enough, the chocolate will be coarse and grainy. But if they blend it too much, the chocolate will be pasty and gummy. Next, the refined chocolate paste is poured into a vat in which a large heavy roller kneads, blends, and grinds the mixture. Agitating this paste smooths out the sugar grains to give the chocolate a silky texture. Aerating (punching holes in) the paste allows acids and moisture to evaporate, which creates a mellower, more well-rounded flavor. This process, called “conching,” can take up to six days to complete! Finally, the refined chocolate is cooled and warmed repeatedly in a process called “tempering.” This gives chocolate its glossy sheen, and ensures that it will melt properly. Finally, in classic assembly-line fashion, machines squirt tempered chocolate into several hundred molds per minute. Some devices pour chocolate over flavored centers (a process called “enrobing”). Others create chocolate shapes that will be filled with liquid before their bottoms are sealed. Eventually, wrapping-and-packaging machines box the chocolates at speeds unmatched by human hands.