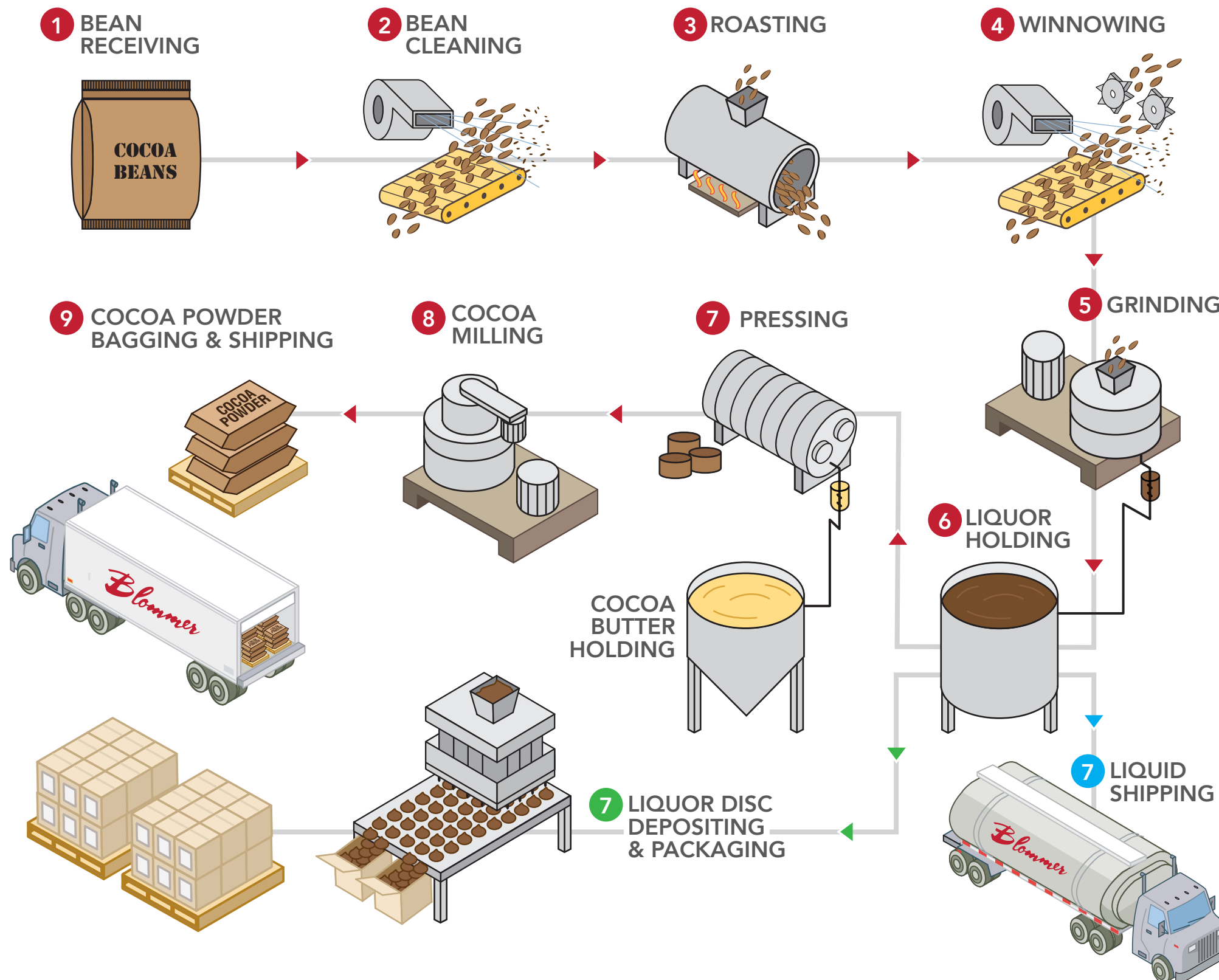
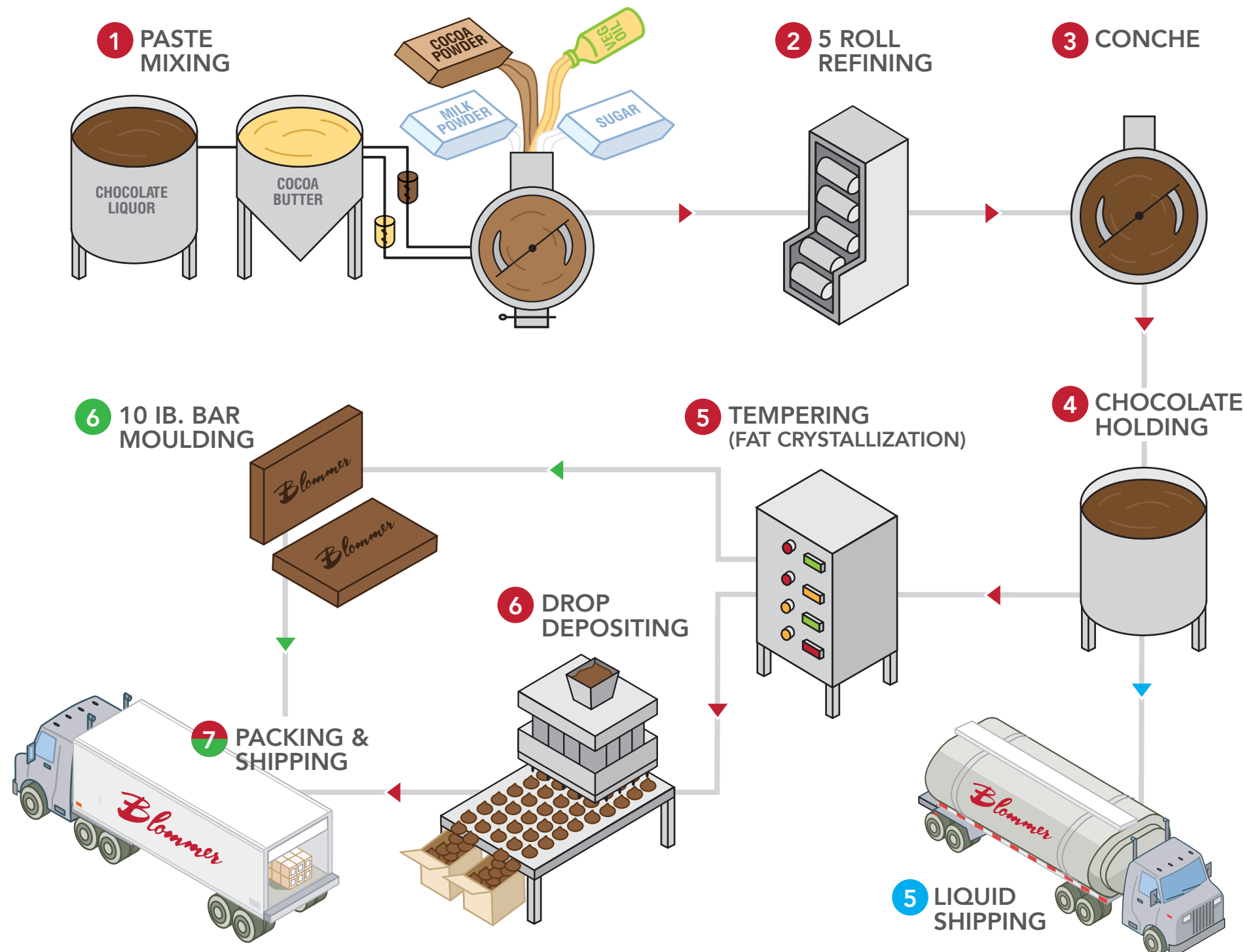


# COCOA BEAN PROCESSING



- 1 BEAN RECEIVING:** Cocoa growing regions are tropical environments near the equator. Once ripe, the farmers remove the cocoa pods from the tree allowing them to remove the cocoa beans from the pods. The cocoa beans are fermented in large piles and then dried for transport. Next, the beans are shipped to the factory for further processing.
- 2 BEAN CLEANING:** The cocoa beans are sent through a destoner and aspirator to remove any sticks, stones, or debris and are stored in designated silos separated by origin.
- 3 ROASTING:** Roasting helps the beans to develop a strong chocolate flavor, remove unwanted volatile compounds, and reduce the micro count. Different roasting temperatures can deliver different flavor profiles.
- 4 WINNOWING:** Winnowing is the process of removing the outer shell from the nib. The nib is ground down into chocolate liquor, the main ingredient in chocolate.
- 5 GRINDING:** Nibs must be ground to make the cocoa particles smaller and release and liquefy the cocoa butter trapped within. They are approximately 52-55% cocoa butter, so the resulting product, known as chocolate liquor, is liquid at warm temperatures.
- 6 PRESSING:** Hot chocolate liquor enters a large hydraulic press where the solids are held (cocoa cake) while the liquid (cocoa butter) is removed with approximately 560psi of pressure.
- 7 LIQUOR HOLDING:** Chocolate liquor is segregated into tanks by origin or sustainability certification and kept for internal use or for shipment to customers.
- 8 COCOA MILLING:** After pressing, the cocoa cake is milled into cocoa powder.
- 9 COCOA POWDER BAGGING AND SHIPPING:** Cocoa powder is weighed into 50 pound bags and placed on a pallet for shipment.
- 7 LIQUID SHIPPING:** Chocolate liquor is loaded into a tanker truck, typically 45,000 lbs, to ship to a customer. The customer will unload the chocolate liquor and use it in their own production of chocolate.
- 7 LIQUOR DISC DEPOSITING AND PACKAGING:** Chocolate liquor is tempered before being deposited on a long belt in a disc shape. The belt passes through a cooling tunnel in order to set up and be ready for packaging.

# CHOCOLATE AND COMPOUND MANUFACTURING



- 1 PASTE MIXING:** Here various ingredients are mixed together based on the recipe. For chocolate, this typically includes chocolate liquor, sugar, cocoa butter, and milk (for milk chocolate). For compound coatings, this includes vegetable fat (typically palm kernel oil) and cocoa powder instead of chocolate liquor & cocoa butter, and may include additional ingredients such as whey powder or functional ingredients like protein. The resulting mixture is called paste.
- 2 5 ROLL REFINING:** After the paste is mixed, it is sent through 5 roll refining which reduces the particles to the desired size. This process creates a fluffy powder called flake.
- 3 CONCHE:** The flake is added to a large conche, and more fat is added to create a thick mass that is kneaded at high speed. This step drives off sour and bitter volatile molecules while simultaneously developing caramel flavors. At this point the product is stabilized to the desired viscosity using lecithin and additional fat, and any flavors (or colors, for compound coatings) are added as well.
- 4 HOLDING:** After the chocolate is standardized with cocoa butter and lecithin to the proper viscosity, the chocolate is sent to holding tanks.
- 5 TEMPERING (CHOCOLATE ONLY):** Tempering heats and cools chocolate to specific temperatures in order to promote a particular crystal structure necessary for finished chocolate products with good gloss, contraction, and a lack of bloom.
- 6 DROP DEPOSITING:** Tempered chocolate or compound is deposited on a long belt in various sized drops. The belt passes through a cooling tunnel in order to set up and be ready for packaging.
- 5 LIQUID SHIPPING:** Chocolate or compound is loaded into a tanker truck, typically 45,000 lbs, to ship to a customer. The customer will unload the liquid chocolate and use it in their specific production of chocolate.
- 6 10 LB BAR MOULDING:** Tempered chocolate or compound is deposited into 10 lb bar molds and sent through a cooling tunnel to set up for packaging.
- 7 PACKING AND SHIPPING:** 10 lb bars are packed into 2000 lb jumbo cartons. When the customer receives this, they can melt it down for their application.