well the cocoa beans have been prepared and handled in the supply chain. FFA content of cocoa butter should not exceed 1.75 % expressed as oleic acid. The higher the FFA content, the more likely the cocoa butter will be soft, possibly causing tempering and solidification problems and unstable crystal forms (see Chapter 13). The cocoa bean quality and origin will influence the final cocoa butter melting characteristics (see Chapter 7).

Upon approval, lots will then be distributed by trailer, truck, container or railcar to the chocolate manufacturing facility. Fumigation would typically occur at the port of entry or port warehouses if necessary prior to delivery. Organic cocoa beans will follow organic storage requirements – no fumigation. Inspection of warehouse storage facilities is necessary to ensure receipt of cocoa beans in good condition without pests or other integrity concerns.

23.3 Cocoa bean preparation on arrival

The cocoa beans arrive at the chocolate processing facility typically in large jute sacks or bulk containers (Figure 23.2). The integrity of the product and the condition it arrives in are critical. Trucks must arrive with tamper evident seals cross checking that all seals match the incoming paperwork. The trailer and product will be examined based on criteria specific to each receiving facility. The beans are gently unloaded to be cleaned prior to storage with lot control.

The cocoa beans go through a cleaning process involving screening, aspiration, magnets and de-stoning to remove strings, clumps, dried cacao pulp, pod pieces, stones and other foreign material. If this cleaning process does not take place efficiently, foreign materials may damage downstream equipment and jeopardise product integrity causing chocolate liquor or cocoa powder to fail to meet the FDA DALs for extraneous matter.

23.4 Cocoa bean cleaning

Screening cocoa beans will remove both coarse and fine residue. Friction between the bean and the screen surface removes dust and sand sticking to the shells. Lightweight particles are pulled out by aspiration. The beans can then be passed over a magnet and on to a de-stoner. This operates on a fluidised bed theory. The beans are lifted into the air slightly and held back by air currents. The denser stones remain on a screen or platform where they can be accumulated and discharged. Insufficient cleaning of cocoa beans can cause excessive wear on equipment further down in the process and can contribute unwanted flavours to the chocolate liquor impacting final quality. At completion of cleaning, the cocoa beans are typically weighed and transported as gently as possible to isolated finished storage silos. The outer shell protects the integrity of the inside of the cocoa bean (the nib or the meat of the cocoa bean).

(a)

(b)

Figure 23.2 (a) Ship transporting cocoa beans entering port. (b) Unloading cocoa beans from ship.