

# MUSCOVADO





# Sugar Processing Toolkit



## MUSCOVADO

### 1.- General information

This is an amorphous crystal-type sugar obtained by supersaturation of the highly concentrated sugarcane syrup (90° Brix to 92° Brix) under local atmospheric pressure conditions.. The difference between the muscovado and the crystal white sugar is the fact the muscovado is not subjected to the syrup clarification process. (for instance, by using the sulfate and calcium hydroxide).

This product must be manufactured with nonfermented raw materials, that are exempt of earthy matter, parasites, and animal and vegetable remains. The addition of essences, natural or artificial colorants, conservatives and sweetenings. It shows a granulated aspect, whereas its color varies from clear beige to dark brown, its flavor is sweet, and has its own smell.

### 2.- Muscovado Processing Details

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#### 2.1.-Final Reference Point

During the concentration, a mass is formed as the sugarcane syrup becomes concentrated. This mass loses the transparency and becomes opaque as the process goes on. Then, the bottom of the large boiler appears, when stirring the mass. During this phase, one must continuously stirring the mass in order to avoid its burning. The practical recognition of the reference point may be as follows.

1) By the determination of the mass Brix: dissolve 100gr mass into 900gr hot water. When the solution is cold, the reading of the Brix is performed, by using a refractometer. If the value of the solution is between 9.0° Brix and 9.5° Brix, the value of the mass will be between 90° Brix and 95° Brix.

2) By pouring a small portion of the mass in a vessel containing cold water: when moving it among the fingers until cooling completely, this mass becomes hard and brittle, as disintegrating completely into pieces when it is thrown on a solid surface.

3) By the temperature of the mass in the large boiler, that should be at the range from 120 °C to 122 °C.

## **2.2.- Beating and Cooling**

After obtaining of the reference point, the mass is immediately removed from the large boiler and taken to the cooling porringer. Following, the mass is beaten (agitated) toward all directions through wood or metal shovels until getting cold. During agitation or beating, the crystallization of the sucrose occurs, and the consequent formation of the sugar as well. Some manufacturers use sodium bicarbonate (food grade) in order to facilitate the granulation of the sugar through the liberation of carbon gas (CO<sub>2</sub>) in the hot mass, which facilitates the beating. When approaching the point, an amount around 50g to 100g sodium bicarbonate for each 100kg sugarcane syrup or cooked mass is sprinkled on the bottom of the beater. When the mass enters into contact with the sodium bicarbonate, it swells because the intense formation of carbon gas. This incorporation of gas (CO<sub>2</sub>) facilitates the granulation of sugar.

## **2.3.- Sieving**

After cooling, the sugar should be sieved (manual- or vibratory – type sieve, 10 mesh) in order to standardize the granulometry (crystal sizes).

## **2.4.- Packaging**

The muscovado is traditionally is placed into PEBD (low density polyethylene) bags with capacity from 25kg to 60kg for commercialization. However, it can also be packaged in packagings of 250g, 500g or 1kg to be directly distributed to the retail market.

## **2.5.- Storage**

The environmental conditions required for muscovado storage must be: dry, ventilated, with air relative humidity below 65%, and protected from birds, insects and rodents. The sugar plastic sacks should be on wooden base and covered with plastic in order to avoid moisture, since this is the main deterioration factor of the sugar.

