

## 4.2: Sugar Refining

While some refining usually occurs at source, most occurs in the recipient country. The raw sugar that arrives at the ports is not legally edible, being full of impurities.

At the refinery, the raw brown sugar goes through many stages:

- Washing and boiling
- Filtering to remove impurities
- Evaporation to the desired crystal size under vacuum to avoid caramelization Centrifuging, in which the fluid is spun off leaving the crystals
- Drying in a rotating drum with hot air
- Packaging in various sizes, depending on the intended market

Sugar beet undergoes identical steps after the initial processing, which involves:

- Slicing the beets and extracting the sugar with hot water
- Removing impurities
- Filtration
- Concentration in evaporators

From here, the process is identical to the final steps in cane processing. See Figure 2 which illustrates the process.

Some of the sugar passes through a machine that presses the moist sugar into cubes and wraps and packages them; still other sugar is made into icing sugar. The sugar refining process is completely mechanical, and machine operators' hands never touch the sugar.

Brown and yellow sugars are produced only in cane sugar refineries. When sugar syrup flows from the centrifuge machine, it passes through further filtration and purification stages and is re-boiled in vacuum pans such as the two illustrated in Figure 2. The sugar crystals are then centrifuged but not washed, so the sugar crystals still retain some of the syrup that gives the product its special flavour and colour.

During the whole refining process almost 100 scientific checks for quality control are made, while workers in research laboratories at the refineries constantly carry out experiments to improve the refining process and the final product. Sugar is carefully checked at the mills and is guaranteed to have a high purity. Government standards both in the United States and Canada require a purity of at least 99.5% sucrose.

*Are animal ingredients included in white sugar?*

Bone char — often referred to as natural carbon — is widely used by the sugar industry as a decolourizing filter, which allows the sugar cane to achieve its desirable white colour. Other types of filters involve granular carbon or an ion-exchange system rather than bone char.

Bone char is made from the bones of cattle, and it is heavily regulated by the European Union and the USDA. Only countries that are deemed BSE-free can sell the bones of their cattle for this process.

Bone char is also used in other types of sugar. Brown sugar is created by adding molasses to refined sugar, so companies that use bone char in the production of their regular sugar also use it in the production of their brown sugar. Confectioner's sugar — refined sugar mixed with cornstarch — made by these companies also involves the use of bone char. Fructose may, but does not typically, involve a bone-char filter.

Bone char is not used at the sugar beet factory in Taber, Alberta, or in Montreal's cane refinery. Bone char is used only at the Vancouver cane refinery. All products under the Lantic trademark are free of bone char. For the products under the Rogers trademark, all Taber sugar beet products are also free of bone char. In order to differentiate the Rogers Taber beet products from the Vancouver cane products, you can verify the inked-jet code printed on the product. Products with the code starting with the number "22" are from Taber, Alberta, while products with the code starting with the number "10" are from Vancouver.

If you want to avoid all refined sugars, there are alternatives such as sucanat and turbinado sugar, which are not filtered with bone char. Additionally, beet sugar — though normally refined — never involves the use of bone char.

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