Brown sugar is a sucrose sugar product with a distinctive brown color due to the presence of molasses. It is either an unrefined or partially refined soft sugar consisting of sugar crystals with some residual molasses content, or it is produced by the addition of molasses to refined white sugar.

Brown sugar contains from 3.5% molasses (light brown sugar) to 6.5% molasses (dark brown sugar). The product is naturally moist from the hygroscopic nature of the molasses and is often labelled as "soft." The product may undergo processing to give a product that flows better for industrial handling. The addition of dyes and/or other chemicals may be permitted in some areas or for industrial products.

Particle size is variable but generally less than granulated white sugar. Products for industrial use (e.g. the industrial production of cakes) may be based on caster sugar which has crystals of approximately 0.35 mm.

Brown sugar is often produced by adding cane molasses to completely refined white sugar crystals in order to more carefully control the ratio of molasses to sugar crystals and to reduce manufacturing costs.

Brown sugar can be made at home by mixing white granulated sugar with molasses, using one tablespoon of molasses for every cup of white sugar (one-sixteenth or 6.25% of the total volume). Thorough blending will yield dark brown sugar; for light brown sugar, between one and two teaspoons of molasses per cup should be used instead. It is, however, simpler to substitute molasses for an equal portion of white sugar while cooking, without mixing them separately.

When a recipe calls for "brown sugar" it is usually referring to light brown sugar; dark brown sugar should be used only when specified.

This is relevant primarily when baking recipes sensitive to moisture and density (such as cakes), because of the difference in moisture content between the two types. In other applications, substituting dark brown sugar over light brown will yield a deeper flavor with more caramel, much like adding molasses would do.

Source