

สมบัติเชิงหน้าที่ของน้ำตาลในการอบ

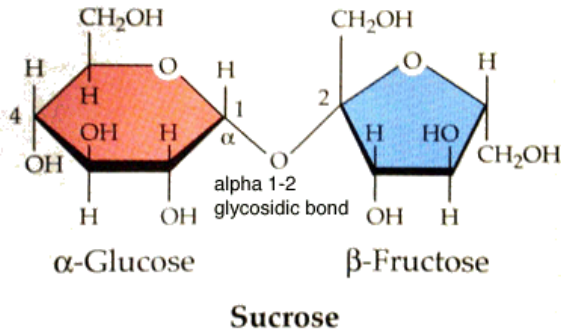
THE FUNCTION OF SUGAR IN BAKING

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WHAT IS SUGAR?

Sugar is a sweet substance that is made up of a molecule known as sucrose. Sucrose, while found in all plants, but is available in very high quantities in sugar cane and sugar beets. Therefore, these are the plants where almost all of our sugar for baking is derived from.

Sucrose has the molecular formula $C_{12}H_{22}O_{11}$



Sugar harvested from cane sugar is chemically identical to sugar harvested from sugar beets. The two are not easy to tell apart from each other and likely you have purchased both. Chances are if your package of sugar does not specify “cane sugar” on it, you have purchased beet sugar.

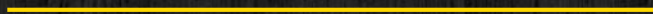


SUGAR'S FUNCTIONS IN BAKING

Let's start with the first set of slides



While we all know that sugar sweetens baked goods, it actually plays many different roles in baking regarding the structure, texture, and color of baked goods.



SUGAR SWEETENS & FLAVORS

- ❖ The first and most obvious role of sugar in baking is that it adds sweetness and flavor. While granulated sugar is a fairly neutral sweetness, other varieties of sugar, such as brown sugar, add more depth of flavor in addition to the sweetness

SUGAR ENCOURAGES BROWNING

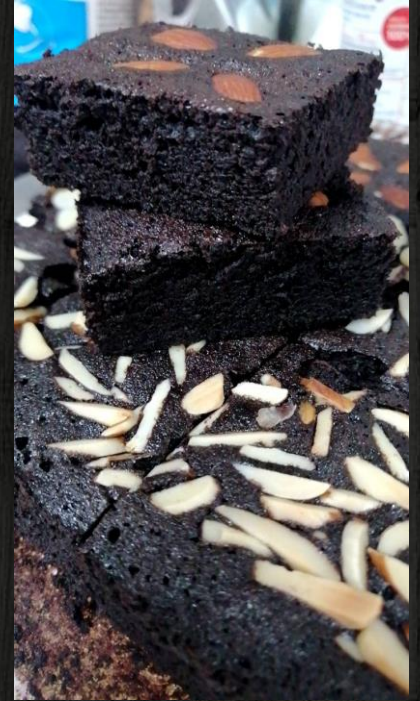
Because of the way sugar caramelizes when heated, sugar also promotes browning of baked goods. Baked goods with higher ratios of sugar will brown more quickly and readily than baked goods with little to no sugar present.





SUGAR HOLDS ONTO MOISTURE

Sugar has hygroscopic properties, meaning that it grabs and holds onto moisture. Because sugar holds onto moisture, baked goods made with sugar do not stale as quickly as baked goods made without sugar.



SUGAR TENDERIZES

Due to the previously mentioned hygroscopic nature of sugar, sugar also serves to help reduce gluten development and tenderize baked goods. Because sugar grabs and holds onto moisture it leaves less moisture readily available, delaying gluten development. Additionally, because sugar holds onto moisture, it keeps baked goods tender for a longer period of time.



SUGAR LEAVENS



Sugar serves to help leaven baked goods in a variety of ways. When sugar is creamed with butter it forces a web of air to get trapped between the two ingredients. This web of air lightens and helps to leaven baked goods.

But sugar doesn't just help leaven when it is creamed with butter. Sugar also leavens baked goods even when creaming is not part of the process. Because sugar holds onto water, it provides structure for gas expansion in the oven, promoting lift and rise in baked goods.



SUGAR STABILIZES



When sugar is beaten into an egg white foam, like when making a meringue, it begins to dissolve and it takes up space between the air bubbles beating beaten into the egg whites. The sugar essentially serves as a cushion between the bubbles which stabilizes the egg foam.

SUGAR DECORATES AND GARNISHES

Sugar can be used as a garnish in a variety of ways. Powdered sugar can be dusted over cakes, brownies, and tarts for a simple elegant topping. Cookies can be rolled in plain sugar or cinnamon sugar for a quick bit of texture. Coarse sugar can be sprinkled on pastries and muffins to add a pretty sparkling finish and some crunch. Additionally, sugar can be heated into a syrup or caramelized and used to make intricate sugar decorations.



SUGAR TENDERIZES

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TYPES OF SUGAR IN BAKING



Let's start with the second set of slides

GRANULATED SUGAR

What is granulated sugar?: Granulated sugar is a refined sugar that is white in color and is the most common type of sugar used in baking. Granulated sugar has a slight coarseness to it but is still a very fine grain.

Best uses for granulated sugar: Granulated sugar is the sugar most commonly used in baking. Use it for almost any sweet baked good.



BROWN SUGAR (LIGHT & DARK)

What is brown sugar?: Brown sugar is granulated sugar that has molasses added into it. Light brown sugar has a small amount of molasses added while dark brown sugar has a larger amount of molasses added into it. Molasses is even more hygroscopic in nature than plain granulated sugar so it keeps baked goods even more moist and adds chewiness.

Best uses for brown sugar: Brown sugar should be used in baked goods where chewiness is desirable, such as for chocolate chip cookies. Use dark brown sugar for even more chewiness and more caramel flavors.



POWDERED SUGAR

What is powdered sugar?: Powdered sugar, which is also called confectioner's sugar, icing sugar, or 10x sugar, is a very finely ground white sugar. Because powdered sugar is so finely ground it is also combined with a bit of cornstarch, or other starch, to prevent it from clumping. Powdered sugar dissolves extremely quickly into baked goods, and because of its fine texture and the addition of cornstarch it can create very tender baked goods.

Best uses for powdered sugar: Powdered sugar works beautifully to make icings and frostings because it dissolves so easily. Powdered sugar also works well to dust over cakes or pastries as a simple decoration.



SUPERFINE SUGAR (CASTOR OR CASTER SUGAR)

What is superfine sugar?: Superfine sugar, also known as castor or caster sugar, is a more finely ground granulated sugar, though not as finely ground as powdered sugar. This type of sugar is popular for professional baking, and is very commonly used in the UK, because it more readily dissolves into batters and doughs. However, it is difficult to find in the US and is typically more pricey than granulated sugar.

Best uses for superfine (castor/caster) sugar: Superfine sugar is best used for baking uses when it is necessary to beat air into ingredients such as when whipping egg whites for a cake or meringue, whipped cream, or for frostings.



MUSCOVADO SUGAR

What is muscovado Sugar?: Muscovado sugar is an unrefined cane sugar that is similar in texture to brown sugar due to the molasses naturally remaining in this type of sugar. Muscovado sugar has a very strong molasses flavor, more so than dark brown sugar, and is more moist than regular brown sugar. Muscovado sugar can be found in both light and dark varieties, similar to brown sugar.

Best uses for muscovado sugar: Muscovado sugar is best used for baked goods where a strong molasses flavor is desirable or complimentary of the other flavors such as for gingerbread, molasses cookies, or other baked goods with warming spices.



SANDING SUGAR

What is sanding sugar?: Sanding sugar is a very coarse type of granulated sugar that is kept clear or sometimes colored a variety of colors.

Best uses for sanding sugar: For topping and decorating desserts.

<https://www.youtube.com/watch?v=S7GeUkJ6U-8>

<https://www.youtube.com/watch?v=c32CrpJGhyM>



TURBINADO SUGAR (RAW SUGAR OR SUGAR IN THE RAW)

What is turbinado sugar?: Turbinado sugar, also known as raw sugar or sugar in the raw, is a type of sugar that has been minimally processed. The texture of the sugar is very coarse, similar to the texture of sanding sugar, and is light brown in color. Almost all of the molasses is removed from this type of sugar so it is dry in texture but does have a hint of molasses flavor lingering.

Best uses for turbinado sugar in baking:
Use it like sanding sugar, to top and decorate baking goods. Adds a crunchy texture.



PEARL SUGAR (NIB SUGAR)

What is pearl sugar?: Pearl sugar, also called nib sugar, is a type of specialty sugar that is made by compressing granulated sugar into large hunks of sugar. This type of sugar is only used for very specific baking purposes as it does not dissolve into baked goods. *Read more about pearl sugar and how it's used here.*

Best uses for pearl sugar: Pearl sugar is most commonly used to make Belgian Liege Waffles but is also used as a very coarse topping on a variety of pastries.



MAKING SUGAR SUBSTITUTIONS IN BAKING

Because sugar does have so much effect on the structure and texture of a baked good, making substitutions with sugar should be done with caution. It is also important to note that each type of sugar has varying density levels so if you will be substituting one for another it is important to do so by weight instead of by volume. Consult this ingredient weight conversion chart when making these substitutions.

Safe substitutions for sugars

◆ **Swapping granulated sugar and brown sugars:**

In most cookies, brownies, and bars, it is typically fairly safe to swap granulated sugar and brown sugar. Granulated sugar will make baked goods more crisp while brown sugar will create chewiness and a more moist texture.

Safe substitutions for sugars

◆ **Using powdered sugar in place of granulated sugar:**

This substitution should only be done in baked goods that are fairly forgiving such as cookies, brownies, bars, muffins, and quick breads. Make sure you are measuring by weight as the amount of volume needed of granulated sugar is significantly less than powdered sugar.

Safe substitutions for sugars

◆ **Swapping brown sugar and muscovado sugar:**

These two sugars function very similarly and can typically be swapped without issues. Keep in mind that muscovado sugar will add a much more intense molasses flavor to your baked goods.

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***Thank you for your
attention***
