

# What is invert sugar?

From the sweeties.net wiki

Invert sugar, or inverted sugar syrup, is a mixture of two simple sugars, glucose and fructose, made by splitting ordinary table sugar, sucrose, into its two halves. It is about 30 per cent sweeter than table sugar, and foods made with it keep their moisture better and crystallise less easily. Those two qualities make it very useful to sweet makers.

## How it is made

Heating sugar in water breaks the bond between its two halves, a reaction called hydrolysis. On its own that is slow, so it is usually helped along:

- **With an acid.** Lemon juice, citric acid or cream of tartar speed it up, often without changing the flavour noticeably. Mixing sugar with citric acid or cream of tartar at about 1,000 to 1 by weight, or with lemon juice at about 50 to 1, and adding water, inverts it quickly. In sweet making, cream of tartar is commonly used at about 0.15 to 0.25 per cent of the sugar's weight, and it gives the syrup a honey like flavour. It can afterwards be neutralised with baking soda.
- **With an enzyme.** Commercially, the enzyme invertase is added at about 0.15 per cent of the syrup's weight, and the syrup is held at 60°C for about eight hours. It is then heated to stop the enzyme and concentrated in a vacuum evaporator to preserve its colour.
- **With a stronger acid.** Factories can also use hydrochloric acid at around 50°C, then neutralise the syrup once it is inverted far enough.

## Why sweet makers use it

Glucose and fructose dissolve in water more easily than sucrose, so a syrup containing them is less likely to crystallise. A mixture of sugar and a little acid, heated to 114°C and added to another food, stops it crystallising without tasting sour. That is the reason cream of tartar turns up in recipes for clear sweets such as barley sugar: see [how is barley sugar made?](#)

## Runny centres

Invert sugar can even be made inside a sweet. Fondant fillings for chocolates can be made with the enzyme added but held back from working at full speed, so the thick, easily shaped filling slowly turns softer and creamier after it has been covered in chocolate. The filling of a Cadbury Creme Egg is inverted sugar syrup made by processing fondant with invertase: see [how is fondant made?](#) and [the Creme Egg recipe row](#)

## Golden syrup, honey and jam

- **Golden syrup** is about 55 per cent invert syrup and 45 per cent sucrose. It was first sold in tins in 1885 by Abram Lyle and Sons, whose London refinery turned a by product of sugar refining into a syrup with the thickness, colour and sweetness of honey. Because of its free fructose, about 25 per cent less golden syrup gives the same sweetness as white sugar.
- **Honey** is mostly a mixture of glucose and fructose, much like invert syrup, which is why it stays liquid for long periods.
- **Jam** contains invert sugar formed by the heat of cooking and the acid of the fruit.

## Why invert?

The name comes from an old test. Polarised light passed through a solution of pure sucrose is turned to the right. As the sucrose is split into glucose and fructose, the angle falls, passes through zero and then turns the other way, so the direction appears inverted. For how ordinary sugar is made in the first place, see [how is sugar made from sugar beet?](#)

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