

Why is seaside rock so hard?

From the sweeties.net wiki

Seaside rock is hard. The reason is not a secret ingredient but the way it is cooked: nearly all the water is boiled out of the sugar, and the sugar is then stopped from forming crystals. What is left is, in effect, a stick of glass made of sugar.

Boiled to hard crack

Traditional seaside rock is made from granulated sugar and glucose syrup, roughly three parts sugar to one part glucose syrup, with enough water to dissolve the sugar. The mixture is boiled to about 147 degrees Celsius, a stage sweet makers call hard crack, and then poured onto water cooled steel plates: see [how is seaside rock made?](#)

Boiling a sugar syrup to that temperature drives off almost all of its water. Hard sweets of this kind are nearly 100 per cent sugar by weight, with only a tiny amount of flavour and colour and almost no water left in the finished sweet. With so little water to soften it, the sugar sets solid as it cools.

Glass, not crystals

The second reason is the way the sugar sets. Sweets made of sugar fall into two broad groups. Crystalline sweets, such as fudge, are made of tiny, organised sugar crystals, which makes them easy to bite or cut. Hard sweets like rock are amorphous: their sugar molecules are jumbled up with no orderly structure, like glass. They contain about 98 per cent or more solid sugar, and as they cool towards room temperature they become stiff and brittle.

The glucose syrup in the recipe helps keep it that way. In sugar glass, the brittle sugar sheet used to make fake windows in films, glucose or corn syrup is added to stop the sugar recrystallising and turning cloudy, by getting in the way of the sugar molecules lining up. Glucose syrup plays the same part in rock. And the sugar has to be fully dissolved first: using too little water can burn the sugar, or leave the end product sugary and liable to grain off.

Why the middle is white

Rock is not glassy all the way through to look at, because part of it is pulled. After boiling and the colours for the casing and letters have been taken off, the rest of the mixture goes onto a pulling machine, which stretches and folds it, working in air and turning it from a solid golden mass into the soft white that forms the centre of the stick. The coloured casing and letters are added around it, and the whole thing is rolled and stretched out into long, thin sticks that set hard.

The weak spot

Glassy sugar has one enemy: moisture. Sugar in this form is hygroscopic, meaning it pulls water out of the air, which is why an unwrapped stick of rock turns sticky and soft on the outside: see [why does seaside rock go soft?](#)

Not all rock is hard

Some Scottish rocks are much softer. Edinburgh rock is made from sugar, water and cream of tartar and has a soft, crumbly texture, and star rock from Kirriemuir is less brittle than seaside rock: see [why does Edinburgh rock crumble?](#)

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