What Is the Scum on My Tea? Hard Water, Harmless Chemistry

From the teas.co.uk wiki

> **Tea scum, in short:** What is the scum on my tea? Calcium carbonate from hard water reacting with tea polyphenols. Harmless. How to reduce or prevent it.

That thin, oily looking film on a cup of black tea, especially in Britain, has a clear explanation and it is not dirt, scale flakes or anything unhygienic: it is mostly a harmless reaction between tea compounds and the minerals in hard tap water. This page explains it clearly and how to avoid it.

Last reviewed by the teas.co.uk team in May 2026.

The short answer

The "scum" is largely a film formed when polyphenols in tea react with calcium carbonate from hard water (and a little with the surface and any milk fats), creating an insoluble layer that sits on the surface. It is harmless to drink and is not a sign of dirty water, a dirty kettle or bad tea, it is essentially a hard water effect, which is why it is far more common in hard water areas.

Why it actually happens

It forms because hard water is rich in calcium and magnesium; those minerals bind with tea's polyphenols at the air liquid surface, producing the visible film, more with stronger, blacker tea and harder water. Soft water areas see almost none. It is the same chemistry behind limescale in the kettle, just happening in the cup with tea rather than on the element.

What to actually do

The fix that works is the water, not the tea: use filtered water (a simple jug filter reduces the minerals enough to largely remove the film), which also makes the tea taste noticeably better in hard water areas. A squeeze of lemon disrupts the film (the acid keeps the compounds in solution), and using freshly boiled, not re boiled, water helps a little. Scrubbing the kettle does not fix it because the cause is the water's mineral content, not contamination.

Quick take

The bottom line: tea scum is a harmless hard water reaction, not dirt or a hygiene problem, so it is safe to drink, it just looks unappealing and slightly dulls the tea. The one fix worth making is filtered water, which removes most of the film and improves the flavour at once, the same single upgrade this wiki recommends for hard water tea generally.

Tea scum: cause and fix, at a glance

Question	Short answer
What is the scum on my tea?	A thin film of calcium carbonate and tea polyphenols that forms on the surface of brewed black tea in hard water.
Is it harmful?	No. The scum is the same minerals already in your water, plus harmless tea polyphenols. Drinking it is not a health risk.
Why does it appear in hard water?	Hard water contains dissolved calcium bicarbonate. When you boil it, calcium carbonate precipitates. With tea polyphenols, it forms a visible thin film on the surface.
Why don't I see it in soft water areas?	Soft water has less calcium dissolved in it. The chemistry that creates the scum does not happen at the same scale.
How do I avoid it?	Use filtered water (reduces calcium), brew at slightly cooler temperatures (less calcium precipitates), add a touch of lemon (changes the chemistry), or live in Scotland or Yorkshire (naturally soft water).
Is it a sign of bad tea?	No. Even premium teas show this in hard water. It is about the water, not the tea.
Is it the same as kettle scale?	Related. Both are calcium carbonate. Kettle scale is the larger-scale deposit; tea scum is a thin floating film.
Why does milk seem to reduce it?	Milk proteins bind the polyphenols and prevent them from forming the visible film. The minerals are still present, just less visible.

Why black tea shows it more than green

Black tea has more oxidised polyphenols (theaflavins, thearubigins) than green or white tea. These oxidised compounds react more readily with calcium than the unoxidised catechins of green tea. So in the same hard water, a strong cup of English Breakfast will show more visible scum than a cup of sencha green tea. White tea, with the least oxidation, shows the least.

This is also why scum is most noticeable in strong cups (more polyphenols extracted) and in cups that have been sitting (more time for the chemistry to develop).

Hard water across the UK

Hardness is measured in mg/L of calcium carbonate. Very soft (under 50 mg/L): Western Scotland, much of Wales, the Lake District, parts of Cornwall. Soft (50-100 mg/L): most of Scotland, much of Yorkshire, parts of Devon. Moderately hard (100-200 mg/L): much of northern England, parts of the Midlands. Hard (200-300 mg/L): much of the Midlands, central southern England. Very hard (over 300 mg/L): London Basin, East Anglia, much of Surrey and Kent.

If you are drinking tea in central London or Cambridge, your scum is mostly water chemistry. In Glasgow or Cardiff, you may rarely see it at all.

What not to do

Stirring vigorously: the visible film tends to break up and reform; vigorous stirring just creates smaller particles that look worse, not better.

Using a tea strainer: does not catch the scum (which is too fine to trap).

Adding bicarbonate of soda: sometimes suggested as a way to soften the water, but it makes the tea taste flat and unpleasant.

Switching cups or brewing equipment: clean cups make no difference to the chemistry. The scum forms in any container you use.

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