Velveting Cheat Sheet

Beef, pork, shrimp and chicken — cut by cut, with the baking-soda dose and the oil temperature for each. Cornstarch wraps; soda changes the meat. They are two steps, not two camps.

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One Technique, Four Different Variables

Velveting is the same idea every time: hold water in the meat and shield it from the heat. What changes is **which property you are working around** — and that is what sets the dose and the clock.

THE VARIABLE THAT MATTERS, BY PROTEIN

Protein	What you're fighting	So the decision is…	What that changes
Beef	Long, coarse fibre in a heavily worked muscle	Which cut — fibrous or already tender	The widest dose range of the four: ½ tsp down to none
Pork	Fat content, which swings from 4% to 36%	How much fat is in the cut, not how tough it is	Soda scales *inversely* with fat — belly gets none
Shrimp	Almost no collagen, and a very short cooking window	Whether you need protection at all	Half the soda, a quarter of the time, and a *cooler* oil
Chicken	Very little — breast dries out, thigh is forgiving	Breast or thigh	Only two answers: a light dose, or none

> **On meat, velveting is a repair job. On shrimp, it's a protection job.** A tough cut gets loosened — chewy becomes tender. A shrimp is already tender; what it loses is the snap. That single difference in goal is why every shrimp number is smaller than the beef number it looks like it should copy.

What Starch and Soda Actually Do

TWO TOOLS, TWO JOBS — NOT TWO RIVAL METHODS

	Cornstarch	Baking soda
Mechanism	Physical. Gelatinises from about 62–72 °C into a film that holds water in and keeps slices apart	Chemical. Raises surface pH, which pushes the muscle proteins away from their isoelectric point so they hold more water
Does it break protein down?	No — it is a coating, outside the meat	**No.** It is electrostatic. The proteins repel each other; nothing is digested
What you notice	Slippery, glossy, silky surface	A genuinely softer interior — with a slight loss of spring
Rinse?	Never — the starch is meant to stay	**Yes**, whenever you used it. Unrinsed soda reads soapy
Risk	Too thick a coat mutes the meat's own flavour	Overshoot turns the surface mushy, then pasty

They are not alternatives. Cornstarch wraps; soda changes. Many restaurant kitchens do both, in that order — soda first, rinse, then the starch coat.

The Doses, Cut by Cut

Every number below is per **450–500 g**. They are a starting grid, not a measured optimum — salt levels, starch brands and pan heat all move the result.

BAKING SODA, STARCH AND REST TIME BY CUT

Cut	Baking soda	Cornstarch	Rest	Note
Beef — flank, skirt	½ tsp	1 tbsp	30 min	The classic candidate; highest payoff
Beef — top round, eye of round	½ tsp	1.5 tbsp	30 min	Lean and fibrous — soda was made for this
Beef — chuck, sliced thin	½ tsp	1.5 tbsp	30–40 min	Connective tissue; needs the longest rest
Beef — sirloin	¼ tsp	1 tbsp	20 min	Moderately tough; a light pass is enough
Beef — ribeye, tenderloin, wagyu	**none**	1 tsp	10 min	Soda would eat the texture you paid for
Pork — belly 五花	**none**	1 tsp	5 min	~36% fat. Coat for gloss, never for tenderising
Pork — shoulder, butt 梅花	¼ tsp	1 tbsp	15–20 min	~12% fat. The most forgiving cut there is
Pork — tenderloin, fillet 里脊	½ tsp	1 tbsp	20–30 min	~3.9% fat. The leannest — the biggest gain
Pork — loin chop	¼ tsp	1 tbsp	15 min	~7% fat. Bone-in: keep it short, watch the heat
Pork — leg, sliced	½ tsp	1 tbsp	20–30 min	Lean but with a tougher surface
Shrimp — fresh 虾仁	¼ tsp	1 tbsp	5–10 min	Not meat. Short dose, short clock, cool oil
Shrimp — older or frozen	½ tsp	1 tbsp	8–12 min	Restaurant-style dose; still rinse it off
Chicken — breast 鸡胸	¼–½ tsp	1 tbsp	15–20 min	At the top of that range, rinse it off
Chicken — thigh	**none**	1 tsp	10 min	Enough fat and collagen of its own

> **One pattern, read down the third column.** Soda scales with how much lean protein there is to work on: more on flank and round, less on sirloin and shoulder, none at all on belly, ribeye or thigh. Fat and marbling have no protein for the soda to act on — you pay the soapy price for a benefit that isn't there.

The Oil Temperature — and Why Shrimp Run Cooler

Three stages cover every velveting job. The one that trips people up is the lowest, because shrimp sit *below* meat, not above it.

CANTONESE HEAT STAGES, WITH WHAT TO LOOK FOR

Stage	Approx. temp	Visual signal	Use it for
三四成 three-to-four	100–140 °C	Surface calm; a few fine bubbles crawl up a chopstick. No smoke	**Shrimp 滑油**, and any delicate protein you want to set without colour
四五成 four-to-five	140–170 °C	Steady bubbling around the food	Velveted beef and pork slices — set the coat, no browning
六七成 six-to-seven	175–190 °C	Rapid bubbling, faint smoke at the edge	Deep-frying and crisp coatings — sweet-and-sour pork, not velveting

> **Shrimp go in the coolest oil, not the hottest.** This is the opposite of the instinct every meat page gives you. Shrimp protein sets at a low temperature and the flesh is thin, so gentle oil walks it up to cooked while the water stays in. At 170–180 °C the surface seizes at once: the shrimp curls hard, goes rubbery, and the coating can set chalky before the centre is warm. Banquet recipes for 水晶虾仁 run as low as 110–120 °C.

"Won't cool oil make the coat slide off?" It can — but the fix is not more heat. Dry the shrimp hard, rest the coat a few minutes so the starch hydrates, and the film holds at 120 °C without trouble. Turning the oil up to cure a coating problem trades a small fault for a worse one.

The Method, In Order

TEN STEPS, WITH THE TWO OPTIONAL ONES MARKED

#	Step	What it is for
1	**Slice across the grain**, 2–3 mm	The highest-value step, and it costs nothing. Long fibres are what you are cutting
2	Optional — soak in cold water, 10 min	Draws out blood and takes the edge off stronger-flavoured cuts
3	**Pat completely dry**	Skip this and nothing after it works. A wet surface sheds the coat into the oil
4	Optional — **baking soda**, massaged in	Use the per-cut dose above. Skip it entirely on belly, ribeye, thigh
5	**Rest** — the time in the table	Longer is not better. Past the window the surface goes from loosened to broken down
6	**Rinse** under cold water	Only if you used soda. About 30 seconds, until the surface stops feeling slick
7	**Pat dry again**	Thoroughly, both sides. The starch will not cling to a wet surface
8	**Season and hydrate** — salt or light soy, a splash of Shaoxing, optional egg white	Toss one direction until the liquid is absorbed and the meat feels tacky
9	**Add starch**, then a teaspoon of oil	Starch to the dose above; the oil film stops the pieces gluing together
10	**Rest chilled, then pass through the oil**	Meat 20–30 min, shrimp 5–10. Oil at the stage in the table above

Steps 2 and 4 are the only optional ones. Everything else is load-bearing.

Why It Fails

SYMPTOM, CAUSE, FIX

What you see	What went wrong	The fix
Soapy, alkaline taste	Soda wasn't rinsed off	Rinse a full 30 seconds, then dry. Fix what you have not yet cooked
Mushy, slick surface	Too much soda, or rested too long	Halve the dose and cut the rest. Shrimp are least forgiving of the four
Shrimp turn to paste	Full meat dose on a shrimp	Quarter to a half teaspoon, five to ten minutes. That is the whole rule
A pool of liquid in the wok	Meat went in wet, or the pan was not hot enough, or too much at once	Dry it completely; cook hotter; work in batches
The coat slid off	Oil below the stage's range, or no rest, or a wet surface	Dry, rest, and hold the oil in range. Do not fix this with more heat
Stiff and rubbery	Oil too hot — most common on shrimp	Drop to 三四成. Shrimp set fast and do not forgive
A thick, pasty shell	Too much starch	You want a film, not a jacket — you should still see the meat through it

What you see	What went wrong	The fix
No browning	Nothing — this is expected	The oil pass sets the coat. Colour comes later, in the stir-fry

Three Things Worth Remembering

1. **Starch wraps, soda changes.** If a dish needs gloss and water retention, starch alone will do it. Soda is for genuinely tough, lean meat — and it always gets rinsed.
2. **Soda scales with lean protein, not with toughness.** That is why belly, ribeye and chicken thigh get none, and why flank, round and tenderloin get the most.
3. **Shrimp are not small meat.** Half the soda, a quarter of the time, a thinner coat, and a cooler oil bath. Treat a shrimp like a mini chicken breast and you get the rubbery result everybody complains about.

Where Each Number Came From

Method	Velveting 101 — the base protocol this sheet condenses
Beef	Velveting beef — cornstarch vs baking soda as two stages
Pork	Velveting pork — fat content sets the dose
Shrimp	Velveting shrimp — half the soda, cooler oil
Chicken	Velveting chicken — egg white vs baking soda
Starch chemistry	Starch slurry — why gelatinisation sets the coating
Oil stages	Oil temperature guide — the six stages and how to read them

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Where the numbers come from. Bicarbonate's effect is electrostatic — raising surface pH moves myofibrillar proteins away from their isoelectric point so they hold more water. No protein is broken down. Cornstarch gelatinises from roughly 62–72 °C. The Cantonese heat stages are traditional kitchen estimates defined by visual cues, not a published standard; ranges vary between sources by 10–20 °C, and the three-stage grouping here is a working summary rather than the full six.

What is a judgement, not a measurement. Per-cut doses and rest times are a starting grid drawn from the site's guides and repeated kitchen testing — there is no single authoritative figure, and reputable sources span a range. The stages of doneness in the oil are judged by colour: 20–40 seconds for meat, 20–30 for shrimp, taken out as soon as the surface turns opaque. Shrimp oils run cooler than meat because their protein sets at a lower temperature in very thin flesh.

On baking soda and the law. You may read that Chinese regulation caps sodium bicarbonate residue in meat at 0.3%. It does not: GB 2760-2024 lists sodium bicarbonate (碳酸氢钠) as a processing aid usable in all food processing with no residue limit specified. The real considerations at kitchen doses are taste and sodium intake, not toxicity.

Missing Umami — a reference library about Chinese cooking ingredients and techniques. It does not publish recipes; it explains why ingredients behave the way they do. Version 2.0, published 5 November 2026. Supersedes version 1.1. When this document is revised the version and last-updated date on page 1 change; the file name stays the same so existing links keep working.