V-BRITE 100

Copper brightener system

V-Brite 100 is a two-part brightener system for acid copper electrolyte. It helps build a smooth, bright copper coating and level minor surface imperfections. Use it for copper plating or electroforming on a suitable, thoroughly cleaned conductive surface.

> **Current setting: 0.2 A per 10 cm² of workpiece surface.**
> Include all surfaces to be plated, including the back. For example, a total area of 100 cm² requires 2 A. Use the current-limiting setting on the power supply.

Which bottle do you use, and when?

Product	For 1 litre of a new bath	During use
V-Brite 100S	6 ml	Replenish only when a bath check shows it is needed.
V-Brite X	1.5 ml	Consumed during plating; allow about 1 ml per 2 ampere-hours.

Ready-to-use Verzinkshop electrolyte already contains the required brighteners. Do not add the initial dose again. Follow only the maintenance instructions on page 3.

Bath and equipment

- Keep the bath at **21-32 °C**. Use a thermometer; the temperature can rise during operation.
- Use an acid-resistant tank, pump and hoses. Keep the solution moving strongly. Set the circulation or filter pump high, rather than at its lowest setting. If deposits become rough or uneven, check circulation and consider a larger pump or air agitation.
- For air agitation, use a suitable low-pressure air pump supplying clean, oil-free air. Do not use a compressor; oil can contaminate the bath.
- Use phosphorised DHP / SF-Cu copper anodes in suitable polypropylene anode bags. Aim for roughly twice as much immersed anode area as workpiece area. Connect the anodes to positive and the workpiece to negative.

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Making a new electrolyte bath

This recipe makes a new bath from individual ingredients. Use pure copper sulphate pentahydrate without anti-caking additives, pure acids and distilled or demineralised water. Do not use this recipe to replenish an existing bath.

Ingredient	For 1 litre final volume	For 10 litres final volume
Copper sulphate pentahydrate	200 g	2,000 g
Sulphuric acid, 96%	36.5 ml	365 ml
Diluted hydrochloric acid (below)	22 ml	220 ml
V-Brite 100S	6 ml	60 ml
V-Brite X	1.5 ml	15 ml
Water	Make up to 1 litre	Make up to 10 litres

Dilute the hydrochloric acid first

Put about 400 ml of water into an acid-resistant measuring vessel. Slowly add **5 ml of 32% hydrochloric acid** to the water and mix carefully. Allow to cool, then add water to a **total volume of 500 ml**. Label the bottle. Use 22 ml of this diluted solution per litre of new electrolyte: this supplies about 80 mg of chloride per litre, assuming the water and other ingredients contain negligible chloride.

Use only the acid strengths specified. Measure the chloride content before adding hydrochloric acid to an existing bath. This dilution helps you measure out a dose; it does not measure the chloride already in the bath.

Mixing sequence

1. Read the safety instructions on page 4. Use a heat- and acid-resistant mixing tank with plenty of free space. Start with water equal to about three quarters of the final bath volume.
2. Slowly add the sulphuric acid to the water while stirring carefully. The mixture becomes hot. Then gradually add the copper sulphate and dissolve it completely.
3. Allow the bath to cool to its operating temperature. Add the measured diluted hydrochloric acid. Then add V-Brite 100S and V-Brite X separately, mixing between additions. Do not mix the concentrated brighteners together beforehand.
4. Only then add water to reach the final volume. Mix well and check the temperature. Plate a test piece as described on page 3 before treating your workpiece.

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Use and maintenance

Start with a test piece

Use a clean piece of copper or a suitably conductive test panel. This is the test piece: connect it to **negative**, with the copper anodes connected to positive. Use 0.2 A per 10 cm² of immersed test-piece surface. Check brightness and uniformity before treating the actual workpiece.

Replenishing V-Brite X

Allow about **1 ml of V-Brite X per 2 ampere-hours**. Calculate ampere-hours by multiplying current in amperes by operating time in hours. This estimates consumption for the whole bath, not per litre.

> **Example:** 2 A for 3 hours = 6 ampere-hours. Expected consumption is about 3 ml of V-Brite X. Base additions on recorded consumption and check the result on a test piece.

Measure out V-Brite X and add it where the solution is moving well. Allow it to mix fully, then test again. Do not automatically add the full initial dose whenever brightness falls. Test first after idle periods too; elapsed time alone is not a reason to add brightener.

Less brightness or an uneven coating?

- First check current, temperature, electrical contacts, workpiece cleaning and solution movement. Duller flat areas with bright edges can indicate a shortage of V-Brite X, but this appearance alone does not prove a shortage.
- Check your dosing and consumption records. Make a measured addition to replace a likely shortage of X. Mix and test before adding more. If consumption is unknown or the result does not improve, have the bath checked instead of repeatedly adding brightener.
- Too much or too little chloride can interfere with brightener performance. Copper and acid levels also need to be correct. Do not add extra starter or hydrochloric acid without knowing what the bath needs.

Filtration and cleanliness

Filter during operation using acid-resistant media, such as suitable polypropylene. Pass the full bath volume through the filter one to two times per hour. This filtration rate is separate from the additional circulation needed to keep solution moving well around the workpiece.

Do not use coffee filters, paper, cotton or other cellulose filters. Particle filtration removes suspended solids, not dissolved copper. Do not use activated carbon during plating: it also removes brighteners.

Activated carbon treatment or electrolytic purification is a targeted treatment for identified contamination. Ask for advice before proceeding. After carbon treatment, remove all carbon residues and use a bath test to determine how much starter and X to add; do not blindly repeat the full initial doses.

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Safety and practical checks

> **Always add acid slowly to water, never the other way round.**
> Mixing releases considerable heat. Stop adding acid if the mixture becomes too hot and let it cool before continuing. Never mix in a sealed container.

Working safely

- Read the safety data sheet for each product before use. Wear splash goggles, suitable chemical-resistant gloves, protective clothing and closed footwear. When mixing acid, also wear a face shield and a chemical-resistant apron.
- Work with good ventilation and prevent splashes and mist. Provide adequate extraction when using air agitation. A dust mask does not protect against gases and vapours; any respiratory protection must suit the chemicals and working conditions.
- Keep children, pets, food and drinks away from the work area. Use stable secondary containment, label all containers and close tanks and bottles when not in use.
- Keep electrical connections dry. Switch off the power supply before moving connections or components. Never leave an operating bath unattended.

If exposure occurs

Eye contact: immediately rinse with plenty of running water for at least 15 minutes and seek urgent medical attention. Remove contact lenses if easy to do. Skin contact: remove contaminated clothing, immediately rinse thoroughly with water and seek medical attention after acid exposure or if symptoms occur. Follow the safety data sheet.

Storage and disposal

Store brighteners in their closed, labelled containers at room temperature, away from direct sunlight and heat. Take used electrolyte, rinsing water and contaminated filters to a waste service that accepts this chemical waste. Do not discharge them into drains or onto the ground.

Questions or assistance?

Contact **info@verzinkshop.nl** or WhatsApp **+31 6 28090022**. Safety data sheets are available on the product page or on request.

Bath check values

Copper sulphate pentahydrate: 165-225 g/l. Sulphuric acid: 50-80 g/l. Chloride: 30-100 mg/l, target 80 mg/l. These are bath concentrations, not quantities to add without measurement. The recipes on page 2 fall within these ranges.