

# VERZINKSHOP

## ELECTROPOLISHING MANUAL

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## Galvanizing electropolishing

Electropolishing is the opposite of electropolishing. Instead of depositing copper, the current dissolves a very thin layer of copper. Peaks in the copper layer dissolve faster than dips, so that a dull or uneven surface quickly becomes tight and shiny. This is ideal for fragile parts with lots of detail.

This product is ready-to-use and developed for copper.

It works on:

- Copper
- Bronze
- Brass

Be careful with brass because zinc has been added to it. This dissolves faster than copper and can cause discoloration.

### Safety in brief

Work neatly and ventilated. Wear PPE: glasses/face shield, acid-resistant gloves and apron. Do not mix with other chemicals. Avoid contact with metal parts around the setup; Phosphoric acid is highly corrosive.

## Electropolishing Steps

### Prepare

- Making workpiece dust and grease free; Degreasing where necessary
- Calculate area in  $\text{cm}^2$
- Preparing the power supply: guide value 1–3 amps per  $10 \text{ cm}^2$

### Setting up a bath

- Use an acid-resistant container (PVC/PP/PE) with sufficient volume
- Pour the electropolishing liquid into the container (ready-made, do not dilute)
- Place the cathode(s) around or behind the workpiece
  - stainless steel, lead or graphite are common; Copper can also
- Connect the cathode(s) to the black minus wire
- Fix the workpiece with unvarnished copper wire; hang in the middle of the bath
- Connect the workpiece to the red plus wire (workpiece = anode)
- Possibly slight agitation or movement of the bath

## Polish

- Turn on the power supply to a low starting value within the guideline
- Process often shows results after just a few seconds
- Review every 10–20 seconds and make adjustments as needed (flow/position/time)
- Don't run too long: edges can otherwise round too quickly
- Rinse thoroughly with plenty of water immediately afterwards
- Neutralize briefly in baking soda water and rinse again
- Dry at room temperature or with hair dryer/heat gun on low setting

## Working conditions

- Ready-to-use liquid, do not dilute
- Working temperature: 21–30 °C
- Process time: seconds to several minutes, frequent check
- Current: workpiece on red (plus), cathode on black (minus)
- Storage: sealed, cool and dry, in chemical-resistant container
- Tanks/baths: PVC, PP or PE

## Technical characteristics

Electrolyte	Phosphoric acid
Metal	Copper, Bronze, Brass
Flow density (aim)	1–3 Amps per 10 cm <sup>2</sup>
Temperature	21–30 °C
Litigation time	Seconds to a few minutes
Polarity	Workpiece = anode (red/plus), cathode = minus (black)
Cathode Material	stainless steel, lead or graphite; copper possible
Tanks/baths	PVC, PP, PE
ph	< 1
Storage	Sealed, cool, dry; Chemical-resistant packaging

## Problems and solutions

Hardly any effect / not shiny enough	Too low current density or poor contact	Increase amps indoors 1–3 A/10 cm <sup>2</sup> ; Clean suspension point and readjust clamp
Dark Haze / Smut	Dirt/grease, wrong polarity, contamination	Check polarity (workpiece = plus); better degreasing; Changing the bath in case of heavy soiling
Pitting/pits	Gas impact, overflow, dirt	Workpiece slightly moving or agitation; reduce current slightly; Better cleaning
Irregular shine	Uneven field distribution/geometry	Centering workpiece; better positioning of cathode; Inserting an auxiliary cathode
Edges rounded too quickly	Too high current or too long	Shorter cycles; Reduce amps; More frequent interim checks
Milky/Matte	Too low current or too cold liquid	Increase amps slightly; Temperature to 21–30 °C
Excessive foaming	Too much surfactant or too strong agitation	Do not dose it; Reduce agitation

## Warning!

The electropolishing liquid is acidic. Avoid contact with eyes, skin and clothing. Wear eye protection (goggles, goggles, or face shield), protective rubber gloves, and aprons when preparing solutions and while working with the solutions. Do not mix the solution with other other chemicals. The electropolishing liquid is toxic when used internally.

Do not work with the Galvanizing Shop products without first reading and understanding the safety information.

The safety data sheet can be found on the product page or can be requested from Verzinkshop.nl by e-mail: [info@verzinkshop.nl](mailto:info@verzinkshop.nl)

Do you have any questions? Contact us via:

Mail: [info@verzinkshop.nl](mailto:info@verzinkshop.nl)

Whatsapp or call: +31 6 28090022

[www.verzinkshop.nl](http://www.verzinkshop.nl)

## Safety

Always wear a dust mask, respirator, gloves, and apron when necessary.

Always treat any chemical as if it could kill you.

Always label buckets and storage containers with a permanent marker so that you and others know what's inside.

Never pour water into acid; it can heat up and explode. Always pour acid into water.

Never leave electroplating baths or other systems that use power unattended. These products may cause a short circuit and cause a fire.

Never come into direct contact with chemicals. They can cause serious burns or other damage and are very dangerous substances if not treated with respect.

Never think you can get away without taking safety precautions! That is not possible!

Never leave the lids off the tanks when not in use. They will fall over!

Always work safely and ensure good protection and ventilation.

The safety data sheet can be found on the product page or can be requested from Verzinkshop.nl by e-mail: [info@verzinkshop.nl](mailto:info@verzinkshop.nl)

## Disclaimer

Did you find an error or something unclear in the manual? Please let us know via [info@verzinkshop.nl](mailto:info@verzinkshop.nl)

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