

CASWELL ONE PLATE NICKEL INSTRUCTION MANUAL

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What is OnePlate® 1

Caswell OnePlate® 1 is a currentless nickel system. It works autocatalytically and uses no power supply and no anodes. The bath deposits nickel evenly, even on edges and in cavities. Mix the concentrate with demi or DIwater, heat to about 85 °C and immerse the part.

One-component system for creation and refilling. Easy to use and maintain. The gloss pattern follows the preparation of the surface. For high gloss work in a fresh bath and possibly polish lightly afterwards.

Required equipment

Use a heat and acid-resistant tank that remains stable at around 85 °C.

An enamelled pan with glass coating or a glass-lined steel tray are suitable. Plastic can only be used if it is intended for this purpose: high-temperature polypropylene (PPH) with manufacturer specification ≥ 95 °C or PVDF. Avoid PVC and standard PE, which can deform at this temperature.

Use a reliable thermometer and a suitable heater (hotplate or chemically resistant immersion heater) and always work with demi or DIwater.

Preparation

Thorough cleaning and degreasing is essential. After cleaning, rinse cold and check with a water breakage test. The surface determines the final image: polishing for mirror shine, pearl blasting for satin or a "brushed" finish with a nylon wheel.

Copper and copper alloys start in the nickel bath briefly in electrical contact with steel until clear gas formation occurs; After that, the sample can be removed and the autocatalytic process continues.

Mixing ratio and preparation of the OnePlate liquid

Work with clean tanks and demi or DIwater. Bring the bath to about 85 °C and mark the liquid line in the tank after it has been filled.

The heating of the liquid will cause the water to evaporate. This must be refilled after the process.

Bath structure & quantities

Batch size	OnePlate®	Distilled water	Total
1 liter	150 ml	850 ml	1,00 litre
2 liters	300 ml	1700 ml	2,00 litre
5 litres	750 ml	4250 ml	5,00 litre
10 litres	1500 ml	8500 ml	10,00 litre

Maximum load per bath

Avoid overloading. Too much surface at once can stop the reaction. Maintain the secure bandwidth below.

Maximum load

Batch size	Safe bandwidth total surface area
1 liter	150 to 200 cm ²
2 liters	300 to 400 cm ²
6 litres	900 to 1200 cm ²
12 litres	1800 to 2400 cm ²

Capacity per liquid quantity

Per 150 ml of OnePlate, you can nickel plate about 200 cm² of surface when a time of 30 minutes is maintained.

Working conditions

Process temperature about 85 °C. No power supply and no anodes. Do not overload the bath; If there is too much simultaneous surface, the reaction can stop.

Target times and layer thickness

- 15 minutes ≈ 0.006 mm
- 30 minutes ≈ 0.0125 mm
- 60 minutes ≈ 0.025 mm

Lawsuit

Clean and degrease, rinse and check with the waterbreak test.

Bring the bath to temperature.

Immerse the workpiece and keep to the scheduled time. If necessary, refill with small ml doses of concentrate outside the workpiece area and bring the level up to the marking line with demi or DIwater.

For copper and copper alloys, start briefly with contact with steel until gas formation is visible.

Remove the workpiece, rinse with demi or DIwater and dry. Light polishing can improve the shine.

Points system (credits)

With electroless nickel plating, the bath consumes a certain amount of active ingredient. The larger the surface area or the longer you nickel plate, the more is consumed. To keep track of this, we use a point system.

One point is equal to **one cm² for one minute**.

Example: if you leave a part of 100 cm² in the bath for 30 minutes, it costs $100 \times 30 = 3000$ points.

Per **150 ml of OnePlate** you can nickel plat about **200 cm² for 30 minutes**. That is $200 \times 30 = 6000$ points. This applies if you refill in the meantime so that you do not fall below 80%. Without refilling you can process a maximum of 1200 points in one pass (for example $200 \text{ cm}^2 \times 6 \text{ min}$), then you have to refill and fill the level with demi/DI water to the marking line.

So you can also do 100 cm² for 60 minutes (also 6000 points), or 50 cm² for 120 minutes (also 6000 points). As long as the surface product **does** not exceed the point limit \times time, the bath will work correctly.

Each batch has a starting value (starting points) based on the amount of OnePlate you've added.

Batch size	OnePlate®	Starting points	80%threshold
1 liter	150 ml	6000 points	4800 points
2 liters	300 ml	12000 points	9600 points
5 litres	750 ml	30000 points	24000 points
10 litres	1500 ml	60000 points	48000 points

Keep track of how many points you use per process. You may not fall below 80% of the starting level. To stay above that, top up every time you have used ~20% of the starting credits.

You do this by adding a small amount of new OnePlate. Then you fill the level with demi/DIwater to the marking line in your tank.

Points to be repaired	Required OnePlate (ml)
600	15
1200	30
2400	60
3000	75
3600	90
4800	120
6000	150

Short:

- Calculate consumption: **area × time = points**
- Check the table to see how many points your bath can handle
- Keep track of how much you've already used
- **Do not refill bags below 80%** →
- First add concentrate, then bring back up to standard with water
- **Do not plate more than the max. load per batch at the same time** (see separate table)

Maintenance, storage and refreshment

After use, the water evaporates due to the high temperature. Refill it to the marking with demi or DIwater so that the concentration remains stable.

In the case of particle contamination, finely filter and remove the cause.

Save the bath sealed and label contents and date. Rinse tools and pumps with water.

Technical characteristics

field name	value
System	Electroless Nickel – OnePlate® 1
Action	Autocatalytic; No power supply and no anodes
Temperature	Approximately 85 °C during plating
Coating Thickness Directive	15 min ≈ 0.006 mm; 30 min ≈ 0.0125 mm; 60 min ≈ 0.025 mm
Bath structure	See table Bath structure & quantities
Capacity per volume	150 ml OnePlate ≈ 200 cm ² at 30 min
Maximum load	See table Maximum load
Pre treatment	Alkaline degreasing; rinse cold; Waterbreak test
Copper (alloys)	Starts briefly in electrical contact with steel until visible gas formation
Refill	Small ml doses outside the workpiece; level refill to marking line with demi/DIwater
Storage	Keep closed; replenishing evaporation; Rinse equipment

Problems and solutions

Problem	Cause	Solution
Dull or matte layer	Outdated bath or insufficient activity	Refresh or correct; uniform 85 °C; Gentle refilling and testing
Pitting	Insufficient pre-treatment or contamination	Improve pre-treatment and rinsing; remove the source of pollution; possibly dummy or refresh
Streaks or roughness	Particles in bath or poor mixing	Additions slow and away from the workpiece; better filtering; Improve mixing
Poor adhesion	Inadequate cleaning or passive layer	Repeat pre-treatment; minimize transfer times; Dip immediately after rinsing
Response stops	Overloading due to too much surface area	Staying within the load limit or working in partial steps

Warning!

The electrolyte is chemically active (acid range). 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 electrolyte with cyanide or alkaline materials, or other chemical substances. The electrolyte is toxic when used internally.

- Do not work with the electrolyte or other 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
 - Do you have any questions? Contact us via:
 - Mail: 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.
 - 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

Disclaimer

Did you find an error or something unclear in the manual? Please let us know via info@verzinkshop.nl

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