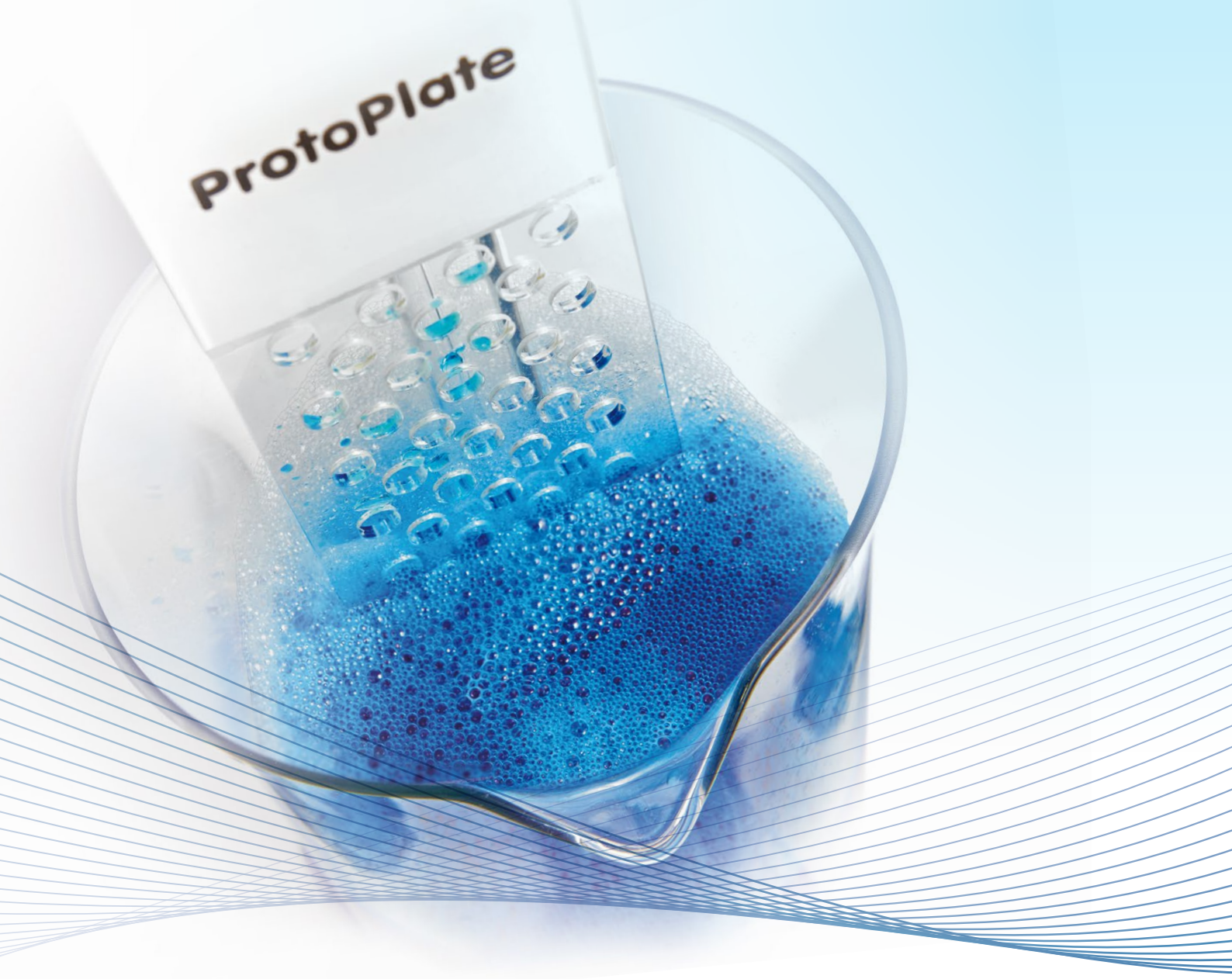
Prototyping 3D Circuitry

Electroless Metallization of 3D Interconnect Devices with LPKF ProtoPlate LDS

LPKF
Laser & Electronics



Metallizing Circuit Tracks with LPKF ProtoPlate LDS

Demand for the laser direct structuring (LDS) process has risen dramatically thanks to its simple and economic production process. With ProtoPlate LDS, LPKF closes a gap in prototyping three-dimensional molded interconnect devices.

With laser direct structuring, a laser beam applies circuit tracks onto a three-dimensional plastic component. Copper and other metal layers are then deposited on these tracks in an electroless process.

For end products, the copper layer is protected against environmental influences with a razor-thin nickel and gold finish. For prototypes, a copper build-up of production thickness is sufficient for performing installation tests and checking circuits.

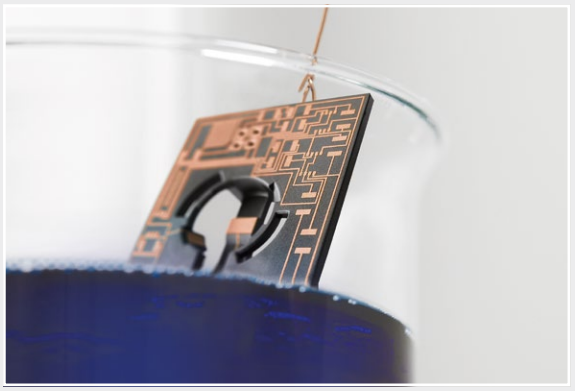
Prototyping with LPKF Laser Direct Structuring (LDS)

1. Create the three-dimensional part
2. Paint the part with LPKF ProtoPaint LDS
3. Structure the circuit layout with a LPKF 3D laser system

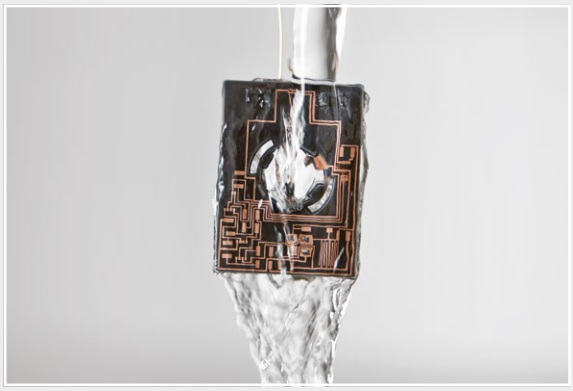
- No chemical knowledge required
- Metallization in 4 easy steps
- Production-level layer thicknesses

1. Pour the copper solution into the beaker

2. Pour in the activator to start the metallization bath



3. Immerse the part in the bath



4. Rinse the part – and the part is ready

ProtoPlate LDS considerably reduces the effort for part metallization, which can now be carried out in your own laboratory without any appreciable chemical knowledge.

The LPKF ProtoPlate LDS basic package consists of an integrated processing cell, beaker, magnetic stirrer, temperature monitor and internal air filtering. The consumables for the copper build-up are available in the LPKF ProtoPlate CU set.

4 Easy Steps to Metallization

Metallization is very easy and the consumables are numbered. First, the copper solution is poured into the beaker and heated to approx. 44 °C (110 °F).

Next the ready-prepared activator is added to start the metallization bath. From this point on, the metallization bath remains active for 1 – 2 hours.

Clean parts are then immersed in the bath and metallization begins after a just a few minutes. Depending on the duration of the metallization process, uniform copper layers develop with a thickness of 3 µm to 10 µm. The time required for achieving various layer thicknesses can be found in an accompanying table.

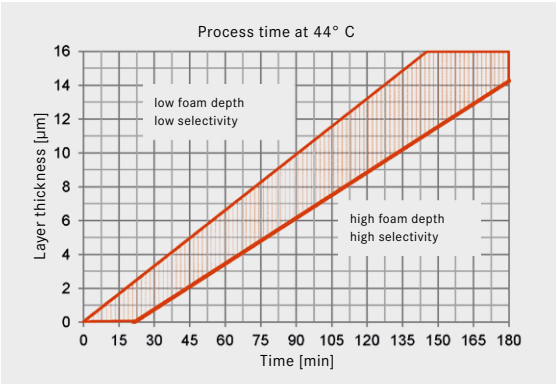
To finish, the LDS parts are removed and rinsed. The used metallization solution can be collected in the original canister and disposed of. Proper labeling for disposal is included in the packaging.

Worldwide Support for Laser Direct Structuring

Wherever they are in the world, users of LPKF systems can be supported from our application centers in Germany, the USA, Japan and China. At these centers, users have access to LPKF's extensive experience in laser material processing and the laser direct structuring process. User training for technical employees and special consulting services complete the offer from the world market leader in laser systems for structuring three-dimensional molded interconnect devices. LPKF will gladly provide application reports and further information on request.

Technical Data: LPKF ProtoPlate LDS	
Enclosure size (W/H/D)	413 mm x 706 mm x 479 mm (16" x 28" x 19")
Weight	23 kg
Power supply	230 V AC, 50 Hz / 110 V AC, 60 Hz
Power input	600 VA
Ambient temperature	20 °C to 24 °C (68 °F to 75 °F), room temperature
Chemical set CU*	
Shelf life or storage of chemicals	Can be stored unopened for one year
Storage temperature of chemicals	5 °C to 25 °C (41 °F to 77 °F), dry

* For further details, see chemical safety data sheets and user manual



Layer thickness depends on exposure time

Made in Germany

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Photos may also show optional accessories.

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