StenTech
Innovative Problem Solvers

Photo Stencil

StenTech's Specialized Products Division

The foremost authority in electroform stencils.

Photo Stencil, is the leading provider of the most complex electroforming precision paste, flux, ball-drop, wafer bump and 3d stencils and screens in North America.

StenTech

PHOTOSTENCIL

Specialized Products Division

EXCLUSIVE INNOVATIVE SOLUTIONS

Leading industry experts.

Photo Stencil, StenTech's specialized products division, is a global leader in electroform stencil technology for the semiconductor and EMS industry. We offer cutting-edge products with micron-level precision and a wide range of specialized solutions, techniques, and materials not available elsewhere in North America.

In the SMT industry, precise stencils and tooling are indispensable. These components demand meticulous design and prompt delivery, leaving no room for compromise on quality, speed, or reliability. Any issues or delays can lead to substantial costs in an environment where timing is paramount, and faults are expensive. StenTech excels in offering unmatched quality, speed, and reliability. With our industry experience, engineering expertise, and comprehensive support, we are the trusted go-to partner. We help our customers improve their operations and profitability by delivering greater productivity and production efficiency than any other.

THIS REGISTRATION IS MAINTAINED BY USFCR VERIFIED VENDOR 2022

CERTIFIED ISO 9001:2015 COMPANY

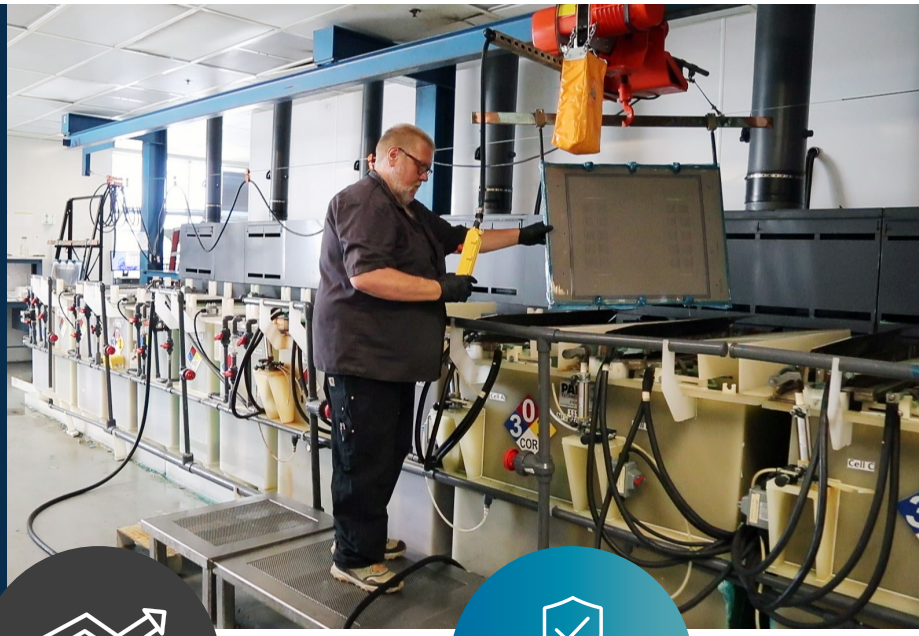
CONTROLLED GOODS PROGRAM CGP REGISTERED

IPC BUILD ELECTRONICS BETTER

INTERNATIONAL TRAFFIC AND ARMS REGULATIONS ITAR REGISTERED AND COMPLIANT

SMTA Surface Mount Technology Association

With more than 25 years of industry experience, we are recognized as the foremost provider of advanced solutions for complex paste, flux, epoxy, and specialized materials printing requirements.



We're problem solvers

Photo Stencil's Applications Engineering Team comprises world-leading experts in stencil printing. Whether you're dealing with challenges like poor paste release or tiny aperture requirements down to micron wafer levels, our team is here to help. We see ourselves as an extension of your R&D team, ready to solve your printing challenges.

Photo Stencil's diverse product technologies require our inspection teams to have the expertise necessary to ensure your products meet the highest standards of quality and functionality.

Equipped to deliver

Our recently updated 35,000 sq. ft. factory in Golden, Colorado, houses state-of-the-art chemical plating production lines, R&D labs, clean rooms and precision fabrication equipment with end-to-end technology, including LED direct imaging (LDI) and AOI inspection, Advanced Nano coating and the revolutionary new StenTech BluPrint™ CVD (Chemical Vapor Deposited) Surface Treatment.

In addition to a comprehensive selection of SMT Stencils, we manufacture specialized tooling and custom wave solder pallet solutions that are meticulously crafted to match your specific requirements.

Teamwork & timing is everything

When issues arise, having a dependable supplier who can promptly address them is invaluable. It requires an experienced team with technical expertise to ensure flawless designs from the start, solid production, and effective communication, all leading to a guarantee of 100% reliability.

Delivery times typically range from two to fourteen days depending upon the complexity of the job and the volumes required.

Our goal is to offer customers unmatched service and technical expertise, providing great value, exceptional quality, and on-time delivery.

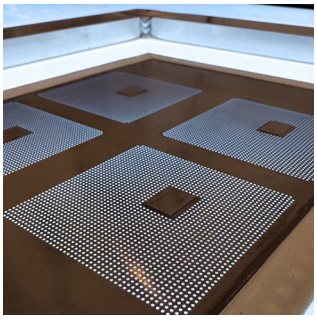
SOLUTIONS

AMTX™
Standard Electroformed Stencils

Photo Stencil holds the exclusive manufacturing rights for the patented AMTX electroformed stencil the meticulous process for crafting metal stencils and parts, accomplished by depositing atoms one by one. This method yields an exceptionally precise duplicate from an initial mandrel or master surface. AMTX Electroforming provides exceptional repeatability and capacity to handle intricate designs. The nickel growth, atom by atom, around photo resist pillars during the Electroform Stencil process results in mirror-like aperture walls. These walls excel in facilitating the effortless release of solder paste compared to the walls of laser-cut apertures..

- Quick turn for large aperture count.
- Smooth aperture walls promote excellent paste transfer.
- Lower area ratios of the order of 0.43.
- Improved under screen cleaning (USC) performance and reduced cleaning frequency.
- Excellent tensile strength and hardness:
- Increases stencil life.

AccuScreen
Electroform Mesh Stencils

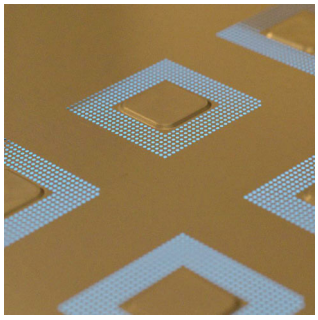


AccuScreen provides a high performance metal mask/screen fabricated using an additive process (Ni). Each large area is printed by mesh of apertures to control print volume. Primarily used for printing on flexible electronics, to print varieties of pastes and inks. Various mesh sizes and wire thicknesses are available with the standard sizes. Additional thickness and screen variation are also possible.

Reservoir Stencils are a special case of single thickness 3D electroform stencil used to print into a recessed pocket of the board. Stencil grown using the electroform process followed by – laser cutting of apertures (optional).

- Tailor different mesh patterns can be used, as per paste/flux properties. Eg: hexagonal, oval, rectangles, squares, circles
- Mesh shape can be adjusted to material flow properties and viscosity
- Greater print deposit uniformity and higher printing yields.
- Less pattern distortion since flat electroformed mesh does not stretch like screen wire mesh

NiEX™
Hard Nickel Electroformed Stencils



NiEX™ electroformed stencils use the same proprietary process as our market leading AMTX™ stencils. The NiEX™ stencil has a higher Knoop Hardness (HK) than our standard AMTX product for those very thin less than .003 applications such as wafer bumping or flux printing. Available in 1 to 3 mil thicknesses..

Ideal for applications with high density and mixed components, NiEX™ is ideal for fine pitch components including BGAs, QFNs and resistor networks

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- Smooth aperture walls promote excellent paste transfer.
- Lower area ratios of the order of 0.43.
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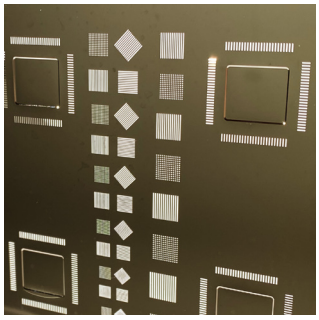
NiCut™
Electroformed Stencils w/ laser apertures



NiCut™ stencils are our standard Electroform (AMTX) Nickel Stencils with Laser Cut Apertures. Beginning life as an electroform stencil, followed by a secondary process utilizing Photo Stencil's own proprietary technology, which further extends the capabilities. These stencils utilize our electroform blank foil material to obtain the smoothest cut from our fiber optic laser system.

- Ideal for applications with high density and mixed components.
- NiCut is ideal for fine pitch components including BGAs, QFNs and resistor networks.
- This stencil is surpassed only by our electroformed stencils.

Step Stencils
Electroformed, Laser Cut & Chemical

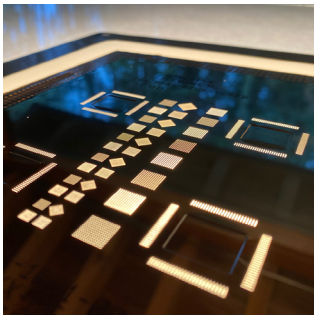
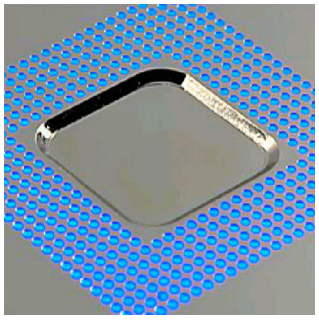


Photo Stencil's step stencils offer significant flexibility in achieving the proper solder paste height and solder paste volume for the overall paste printing process. Photo Stencil is pioneer in the field of Step Stencil technology with all processes contained in house for the most comprehensive service available in the industry.

- Available as 'step up' and 'step down' squeegee side, 'step up' PCB side or on both sides.
- Ideal for providing bar code relief and thus maintaining the maximum gasket.
- Matched Slit squeegee blades allow for flexure over the raised pocket areas.
- Multi-thickness steps available.

3-D
Electroformed Stencils

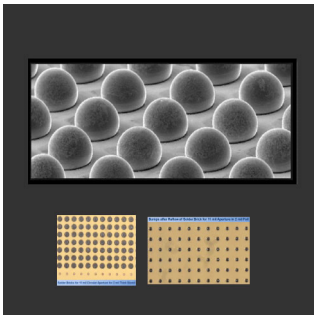


Our 3-D Electroform stencils are ideal for printing on substrate surfaces that have protrusions rising above the print surface. An example of this type protrusion might be a flip-chip device already mounted on the PCB prior to solder paste printing. This is a single thickness electroform stencil, with relief areas not to damage the protruded sections on the board or unit.

A single thickness Electroform Stencil is formed with a raised relief pocket positioned over the protrusion. A squeegee blade with a 25micron slit is ideal for allowing the squeegee blade to raise up over the raised pocket but still be able to print in front of and behind the raised pocket.

- Successful solder paste or flux printing
- Simplified process for multi level printing.
- Single stencil requirement – multi function design.
- Higher assembly yields from successful solder paste printing.

Wafer Bump Stencils

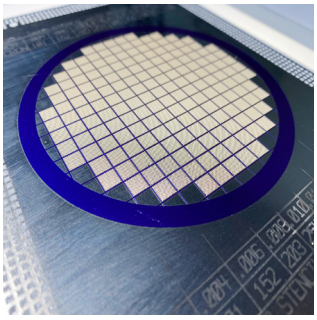


Wafer bumping stencils are electroform stencils used to obtain bumps on wafer pads. The stencil usually has from 25,000 apertures up to 500,000 apertures.

Photo Stencil produces two different sets of stencil to achieve this (a) Paste Print stencils: A print process where solder paste is printed on die pad on the wafer, the wafer is then re-flowed, melting the solder paste to form truncated spheres (bumps) on the wafer die

- Useful for bumping of wafers of various sizes and bump count and bump size (<200um).
- Typically used when pitch is at least more than 2 times the bump diameter. (b) Flux print +Ball Drop Stencils: Set of two stencils.

Wafer Ball Drop Stencils



This is the second stencil from the set of Flux and ball-drop process used in wafer bumping. Flux is printed on to wafer pads using 1st stencil followed by using a wafer ball drop stencil to drop solder balls directly onto the connection pads of a wafer. Since flux is printed onto the wafer pads before the ball is dropped, it has optional relief or standoffs placed on contact side.

Stand off on wafer Ball drop stencil can be obtained by:
1. Laminating a mask (photo resist) on the wafer side of the stencil to keep the stencil from contacting the flux.
2. E-form Nickel rib layer is grown on wafer side.

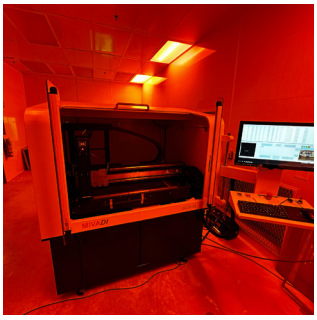
- Ball drop stencils are used for different wafer sizes, sphere size and pad pitch.
- Easy to use, regular solder paste printer can be used for manual ball drop.
- Ball drop process is also preferred when the wafer pad is larger or pitch is tighter to use paste printing application.
- Used instead of wafer bumping using paste printing

PRODUCTION

CAD ENGINEERING

Our team of CAD design experts provide customers with a comprehensive design service. This service includes using our exclusive front-end software tool StenCAD, which automatically examines each assembly's design by filtering the Gerber file's D-codes. It ensures that the proposed design achieves the necessary area ratio (AR) for a successful paste deposit.

IMAGING



We've recently integrated a cutting-edge Niva Tech LED Imager, which has replaced traditional analog film plotting. This advancement has significantly improved the imaging process, aligning the output with a remarkable precision of 3-4 microns.

DEVELOPING

We have recently upgraded to state-of-the-art IPS Developer/ Dryer equipment, which has been specially customized for Photo Stencil. This advanced system significantly streamlines and enhances the development process, thanks to its vertical track-fed configuration, resulting in improved consistency, superior quality, and faster processing.

CHEMISTRY LABORATORY

Our laboratory technicians have expertise in regularly testing all the chemical solutions within the production flow, verifying the accuracy of the chemicals in the processing tanks on a daily basis. This practice stabilizes the electrochemical reaction, leading to the creation of electroform stencils that exhibit exceptional precision and intricate features.

At StenTech, we pride ourselves on our expertise, speed, and reliability. We always aim to make doing business with us easy.

Step One

ORDERS & ACCOUNT SET-UP

New customers can request a quote on StenTech.com by submitting specifications and files. Our team will assign an account manager and engineer to review the job details and swiftly send back a quote. Upon approval, an account is set up, and your order begins.

- *We understand the importance of time, so we prioritize fast quote turnaround and order processing for production.*

Step Two

PRODUCTION

Your order is quickly put into production. We manufacture prototypes to full finished production pieces, and the turnaround time depends on the order's complexity. Each job undergoes rigorous inspection before shipping.

- *We always strive to meet your mission critical deadlines without risking quality and trust.*

StepThree

FULFILLMENT

We are committed to on-time delivery and ensure timely and accurate delivery of your jobs, consistently striving to provide exceptional service throughout the entire process.

- *Your satisfaction and peace of mind are our top priorities.*

CHEMICAL PLATING

Our chemical plating production center has undergone a redesign aimed at optimizing production processes and achieving notable advancements in stencil thickness and quality control. This facility boasts the most cutting-edge equipment for chemical-etched stencils, establishing us as the unmatched leader in capability throughout North America.

LASER CUTTING

Our facility is equipped with numerous cutting-edge LPKF 6080 High-speed laser systems that feature ultra-light carbon fiber axis construction. Additionally, we utilize the lightning-fast Tannlin TII laser, a highly integrated stencil cutting machine, to provide large-format, high-volume output, exceptional speed, and consistent precision stencil production

ADVANCED NANO COATING

Our exclusive Advanced Nano coating grants the stencil top anti-adhesion properties, preventing solder flux / paste from sticking to it. Utilizing a specialized 1-2 um hardened nano coating, Stentech's Advanced Nano stencils boasts a permanent hydrophobic layer that repels solder flux / paste.

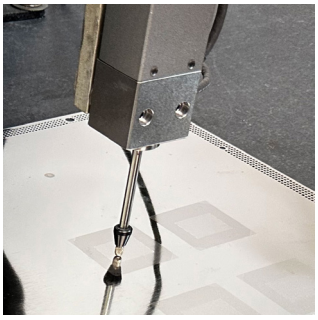
CHEMICAL VAPOR COATING

StenTech BluPrint™ CVD (Chemical Vapor Deposited) Surface Treatment for Stencils stands as a North American exclusive, offering the market's most premium stencil coating. This revolutionary process ensures increased durability, enhanced accuracy, superior performance, and a longer stencil lifespan.

Golden, Colorado, USA

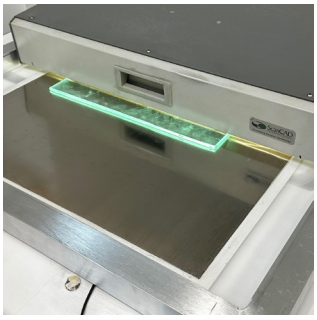
QUALITY INSPECTION

METROLOGY



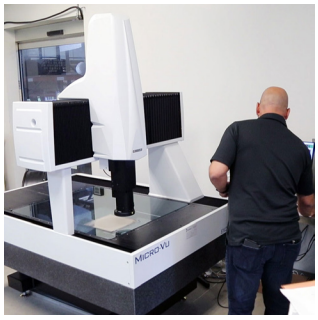
We have Lupine measurement equipment enabling us to employ high precision metrology. From measuring nanometers of thin film, to AI inspections of micro defects, our team combines a multitude of advanced inspection, assembly, and measurement technologies.

APERTURE SCAN



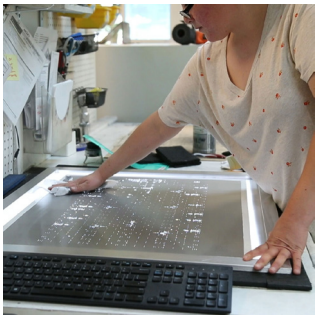
Our Scan Cad / Automated Optical Inspection (AOI) equipment facilitates automated detection and identification of defects and anomalies. It possesses the ability to precisely record the configuration, compatibility, and operation of all layers, including those with concealed vias. This technology provides a range of analytical options, both destructive and non-destructive.

VERIFICATION



Our new Micro View non-contact and multi-sensor measurement machine is furnished with cutting-edge metrology software. It can measure parts as long as 2.5 meters and weighing up to 100 kilograms. The high-resolution digital camera is equipped with programmable optical and digital zoom features to ensure precise inspection.

HAND CRAFTED FINISHING



Our production and inspection team is exceptionally skilled and knowledgeable, committed to ensuring that every SMT stencil and tooling device meets perfect specifications. Through their meticulous craftsmanship, they guarantee quality, precision, and utmost care in the manufacturing process.

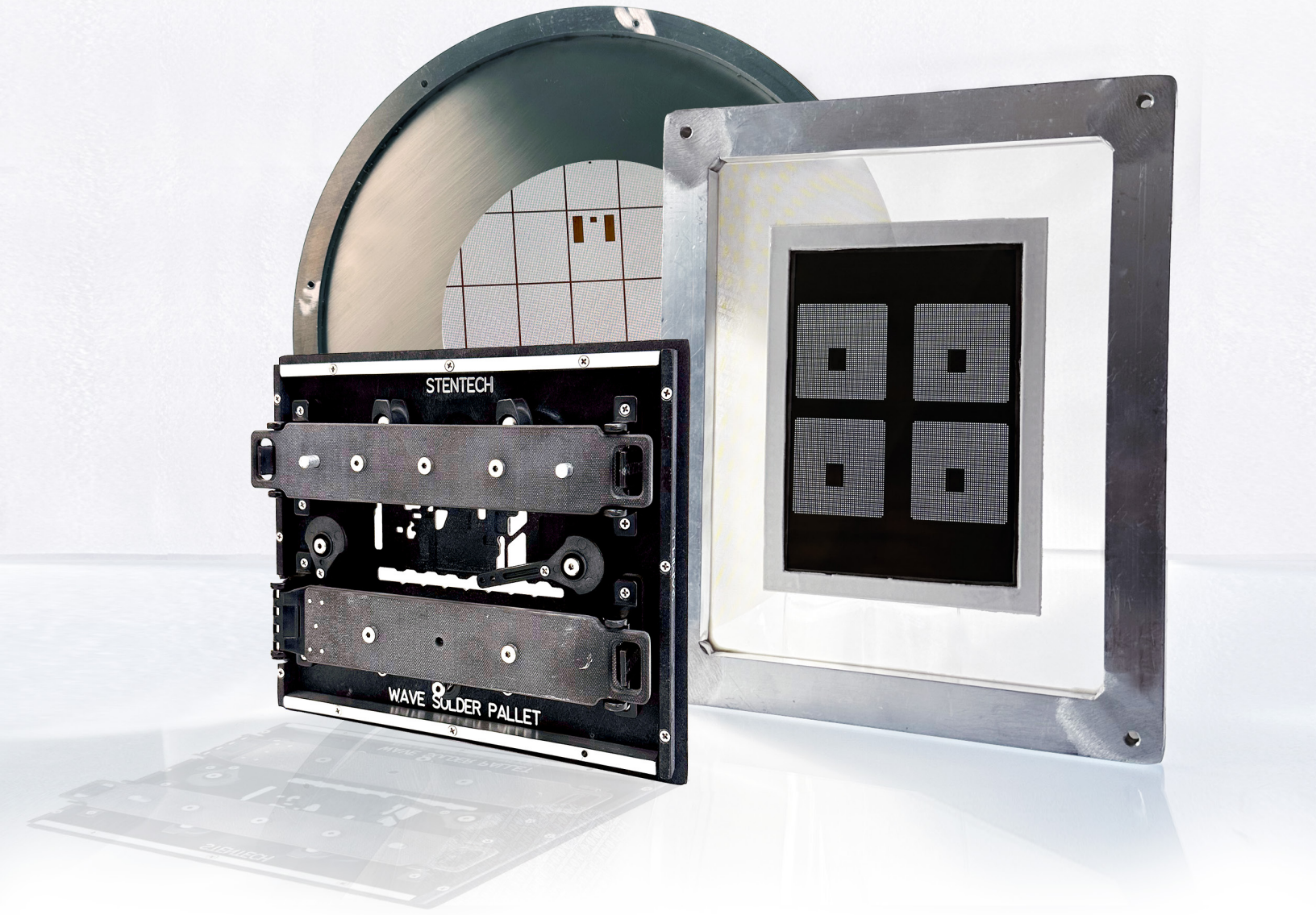
> “Great things in business are never done by one person; they’re done by a team of people.” – Steve Jobs

CUSTOM BUILD

At Photo Stencil, we excel in collaborating directly on new customer projects, seamlessly aligning with the rapidly evolving demands of the SMT industry.

Our engineering design team works closely with production to create prototypes that meet each product's exact specifications. With our wealth of experience, we pride ourselves on being innovative problem solvers.

Also our tooling department helps develop integrated solutions that optimize production capabilities. We consider ourselves an indispensable extension of your R&D team, ready to support your innovation journey.

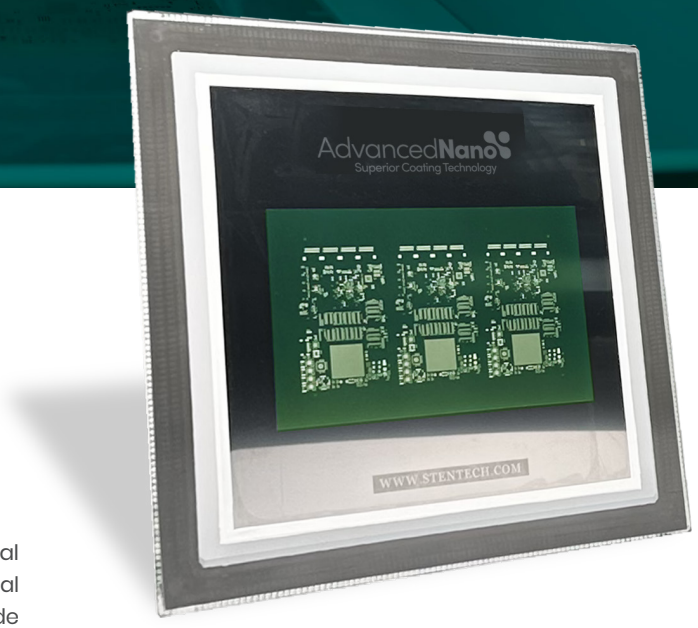


AWARD WINNING COATING

StenTech Advanced Nano™

StenTech's award winning Advanced Nano is an exceptional coating that revolutionizes stencil technology. Unlike traditional stencils, this highly unique coating is applied to the bottom side of the stencil and inside the apertures, leaving the squeegee side uncoated. This advanced coating grants the stencil remarkable anti-adhesion properties, preventing solder / flux from sticking to it. Utilizing a specialized 1-2 um hardened nano coating, Stentech's Advanced Nano stencil boasts a permanent hydrophobic layer that repels solder flux.

Consequently, this innovative feature facilitates enhanced paste transfer during printing processes, leading to improved efficiency and precision in electronic manufacturing. Most of all it allows for **SAME DAY DELIVERY of your stencils where possible**.



Quickest lead time of a coated stencil
(A|N is ready for use 30 min after coating)
Allows for same day SHIPMENT!

- Higher volume of paste release
- More uniform shape on solder deposits
- Higher transfer efficiency and print yields
- Reduced underside wiping
- Reduced surface energy of the paste contact area
- Better contour definition and lower failure.
- A|N thickness variance is +/- 1 micron across any stencil
- Greater yields on low-area-ratio / miniaturized applications

GLOBAL TECH AWARDS 2023 Winner

NPI CIRCUITS ASSEMBLY AWARD 2023

WINNER 2023 MEXICO TECHNOLOGY AWARDS

StenTech.com/AdvancedNano

REVOLUTIONARY TECHNOLOGY

StenTech BluPrint™ CVD Stencils.

StenTech BluPrint™ eliminates the need for frequent replacements and ensures a longer lifespan for the stencil, ultimately reducing maintenance and replacement costs associated with traditional coatings while dramatically enhancing overall performance.

We are proud to present our latest innovation in stencil coating technology – the all new **StenTech BluPrint™ CVD (Chemical Vapor Deposited) Surface Treatment.** Engineered to elevate the Surface Mount Technology (SMT) processes, this advanced coating offers a comprehensive set of benefits that collectively contribute to improved stencil performance, longevity, and the overall quality of the SMT assembly process streamlining production.

The continuous drive to reduce component sizes and circuit boards poses a challenge for solder paste printing with laser-cut stainless-steel stencils. Laser technology advancements align with coating finish improvements for these stencils. StenTech's BluPrint™ CVD is meticulously designed to be the top choice in North America for meeting the evolving requirements of the semiconductor and EMS industry.

StenTech.com/BluPrint

- #1 — 1ST IN THE US NORTH AMERICA MARKET
- LIFETIME GUARANTEE OF THE STENCIL*
- SUPERIOR TRANSFER EFFICIENCIES
- ULTIMATE REPEATABILITY REDUCED COSTS
- CONSISTENCY OF CPKS — CONTACT ANGLE 105-107 RANGE

StenTech™

Innovative Problem Solvers

25 YEARS

As North America's largest SMT printing solutions partner we deliver precision stencils and tooling products with best of class quality and unmatched rapid turnaround times. Our consistent service enables the uptime reliability of our customers.

StenTech.com/PhotoStencil

Call us: 719-599-4305

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