

StenTech BluPrint™

Ultra Vapor Coating



Exclusive Cutting-Edge Physical Physical Deposition Surface Treatment

Revolutionary precision engineered stencils
for high-volume printing consistency,
servicing the semiconductor and EMS industry.



StenTech BluPrint™ PVD (Physical Vapor Deposited) Surface Treatment represents a ground breaking technique for applying thin material films onto a substrate. This innovative process involves introducing Physical precursors into a reactor chamber, where they undergo Physical reactions and solidify as a deposited material on the substrate's surface.

REVOLUTIONARY TECHNOLOGY

StenTech BluPrint™ PVD 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™ PVD (Physical 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.



WINNER:
2024 CIRCUITS ASSEMBLY NPI AWARD

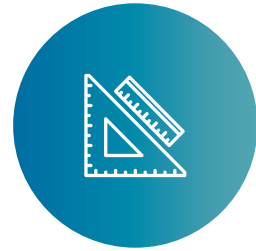


The continuous drive to reduce component sizes and circuit boards poses a challenge for solder paste printing with laser-cut stainless-steel stencils. Laser technology advancements align with coating finish improvements for these stencils. StenTech's BluPrint™ PVD is meticulously designed to be the top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



FEATURES

StenTech BluPrint™ is the most sophisticated stencil surface treatment available and exclusive to StenTech.



Ultimate thickness consistency

The advantage of StenTech's Physical Vapor Deposited Surface Treatment lies in its consistent thickness across all areas, eliminating the dependence on the dynamic physics involved in spraying a liquid. This revolutionary coating process also offers a range of extended advantages, including exceptional thermal stability, Physical inertness, anti-stiction properties, a refined smooth surface finish, customizable characteristics, and unwavering consistency in print quality.



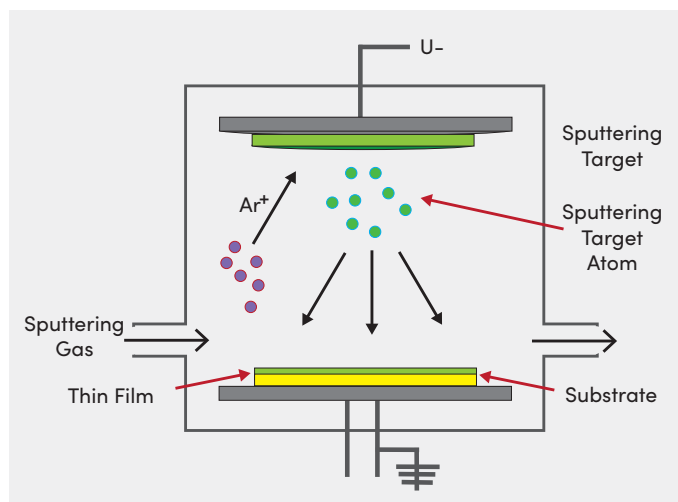
Virtually indestructible

StenTech BluPrint™ offers consistently repeatable processing without variation, providing a virtually indestructible coating that remains resilient without degradation and ensures uniform printing, with the only variation being the area ratio, while each aperture remains identical.



Enhanced performance

The StenTech BluPrint™ process begins with plasma polishing, creating a smoother, high-gloss surface with improved corrosion resistance. This process polishes both the stencil foil surface and aperture sidewalls, resulting in smoother sidewalls as a base for the subsequent coating. StenTech's BluPrint™ PVD Surface Treatment is then applied at a thickness approximately 1000 times thinner than current alternatives, ranging from 3-5 micrometers compared to 3 nanometers.



In the StenTech BluPrint™ PVD process, the wafer is exposed to one or more volatile precursors, which react and/or decompose on the substrate surface to produce the desired deposit.

This process is called Ion Beam Deposition (IBD) and involves rotating "Targets" or "Precursors," made from special materials, inside a chamber with stencils for coating. When heat and vacuum are applied, the materials undergo oxidation, vaporize, and then redeposit onto the stencil foil. These vapor-deposited materials form layers of color and coatings, resulting in a unique hydrophobic and oleophobic coating.

BENEFITS

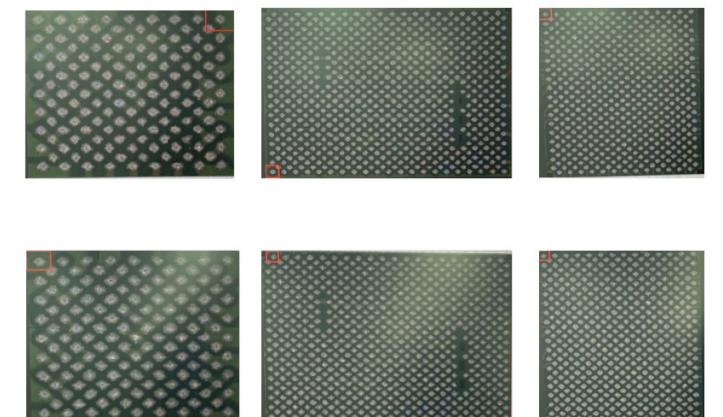
Exclusive superior coating technology. Unsurpassed performance and value for high-volume printing.



Good	Better	Best
Generic ceramic coatings (competitors coating)	StenTech Advanced Nano™	StenTech BluPrint™
<ul style="list-style-type: none"> ✓ Reduced bridging ✓ Underside cleaning ✓ Increased transfer efficiency ✓ Hydrophobic, Oleophobic & Fluxophobic ✓ Better deposits ✗ Longer cure times ✗ Degradation with some cleaners ✗ Can fractures like glass 	<ul style="list-style-type: none"> ✓ Ready for use 5 min after coating ✓ Can be delivered and used same day ✓ Reduced bridging ✓ Reduced underside cleaning ✓ Increased transfer efficiency ✓ Improved Yield: Transfer of solder paste (volume) Brick formation / integrity of the design ✓ Increase ROI ✓ Thermally cured ✓ Very thin coating, 2-3 microns ✓ Low Surface Energy ✓ Hydrophobic, Oleophobic & Fluxophobic 	<ul style="list-style-type: none"> ✓ Ready for use 45 min after coating ✓ Can be delivered and used same day ✓ Reduced bridging ✓ Reduced underside cleaning ✓ Increased transfer efficiency- compared to non-coated ✓ Improved Yield: Transfer of solder paste (volume) Brick formation / integrity of the design ✓ Increase ROI ✓ < +50,000 prints off one stencil ✓ 10X harder than Teflon ✓ 1,000 times thinner than Advanced Nano <100nm ✓ No thickness variation on all coated surfaces. ✓ Consistent deposits of solder paste ✓ Reduced Rework ✓ No fall off - Less cleaning ✓ No degradation from Cleaners ✓ Contact angle is almost 109 degrees ✓ Super hydrophobic ✓ Processed under vacuum, this ensures impurities burn off and a perfect environment.

Test: Paste Volume in micro-BGS's

StenTech BluPrint™ 3 Mils	Location	Vol MAX	Vol MIN
	U6400	218.9	113.4
	U6100	237.3	110.3
	U4700	147.1	89.2
	U2200	191	113.4
U8000	138.6	93.7	
Competitors Nano 3 Mils	Location	Vol MAX	Vol MIN
	U6400	150.7	105.2
	U6100	161.2	85
	U4700	150	95.8
	U2200	142.6	79.4
U8000	117.3	54.4	



StenTech BluPrint™ Application & competitive data on request*



1ST IN THE US NORTH AMERICA MARKET



SUPERIOR TRANSFER EFFICIENCIES



ULTIMATE REPEATABILITY REDUCED COSTS



CONSISTENCY OF CPKS CONTACT ANGLE 105-107 RANGE

01 UNIFORM COATING THICKNESS

StenTech BluPrint™ PVD ensures a uniform and conformal **1 atom thick coating**, providing consistent thickness across complex geometries of SMT stencils. This uniformity is crucial for achieving precise and reliable solder paste deposition during the printing process.

02 ENHANCED DURABILITY

StenTech BluPrint™ PVD coating can significantly improve the durability and wear resistance of SMT stencils. This is important in high-volume production environments where stencils are subjected to repeated use, reducing the need for frequent replacements and maintenance.

03 HIGH THERMAL STABILITY

StenTech BluPrint™ PVD coating often exhibit excellent thermal stability, making them suitable for applications involving elevated temperatures during the soldering process. This stability helps maintain stencil integrity and performance under demanding manufacturing conditions.

04 PHYSICAL INERTNESS

The Physical inertness of StenTech BluPrint™ PVD coating makes them resistant to reactions with solder paste and other process Physicals. This resistance contributes to the longevity of the stencil and ensures consistent performance over time.

05 ANTI-STICTION PROPERTIES

StenTech BluPrint™ PVD coating can provide anti-stiction properties, reducing the likelihood of solder paste sticking to the stencil. This is particularly important for preventing defects such as solder bridging, ensuring clean and accurate paste transfer onto PCBs.

06 SMOOTH SURFACE FINISH

StenTech BluPrint™ PVD coating typically results in a smooth surface finish on the stencil. A smooth surface minimizes friction during the printing process, facilitating better release of solder paste and improving the overall quality of printed solder joints.

07 CUSTOMIZABLE PROPERTIES

StenTech BluPrint™ PVD processes allow for the customization of coating properties such as thickness, hardness, and composition. This flexibility enables manufacturers to tailor the coating to specific requirements, optimizing stencil performance for diverse applications.

08 CONSISTENT PRINT QUALITY

StenTech BluPrint™ The combination of uniform coating thickness, durability, and other properties ensures consistent print quality over multiple production cycles. This is essential for achieving high-yield and reliable SMT assembly.

