

DEK 

ASM 

NanoClear Coated Stencils

DEK Engineered Products

Oct 2014

Our customers' issues

- **Apertures are getting smaller**
- **Paste does not release as well**
- **Contaminates the bottom of the stencil**
- **Increases defects / reduces yield**
 - Insufficient solder
 - Bridging
 - Solder balls on surface of PCB
 - Flux residue
- **Requires more frequent cleaning**
- **Reduced efficiency (wasted time)**
- **Increased use of consumables (cost)**
 - USC fabric (use “cheap” fabric to reduce cost)
 - Lint creates more defects
 - Cleaning chemistries (use IPA to reduce cost)
 - IPA breaks down flux and can create more defects

NanoClear solves these issues

- **Reduces Defects (Bridging, Insufficient, Solder Balls)**
 - Reduces the ability of flux (solder paste) to stick to apertures and bottom side of stencil
 - Improves the ability of the USC to clean the stencil
 - Improves the gasketing of the stencil to the PCB
 - Greater first pass yield
- **Increases Efficiency**
 - Reduces the frequency of cleaning
 - Allows time for more production or SPI
- **Reduces Cost**
 - Less cleaning uses less USC fabric and solvent
 - Less expensive vs. competitors products
 - Easy to apply product with just a wipe
 - Can be applied by stencil manufacture or end user to new or existing stencils
 - Permanent bond but can be reapplied if needed
 - It is chemically inert when dry so no possible interaction with paste

NanoClear is a Repellency Treatment

Water repellent: *hydrophobic*

Oil repellent: *oleophobic*

Examples of Common Water and Oil Repellency Treatments



On fabric



On carpet



On paper food containers

Image source: Daikin Industries (UNIDYNE web page)

Overview

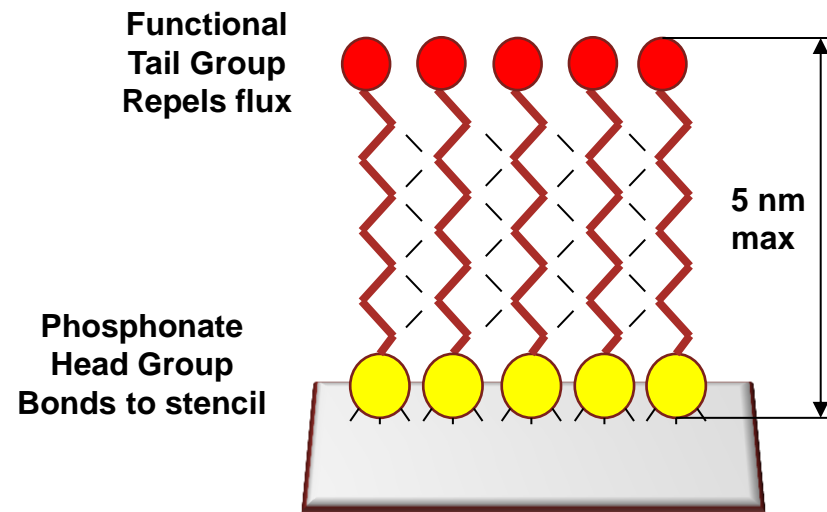
NanoClear wipes:

- **Modify stencil contact surfaces with a flux-repellent nano coating in minutes**
 - Increase yields and output on SMT assembly lines
 - Improve print quality and reduce variation
 - Decrease understencil wipe frequency
- **Utilize proprietary SAMP technology**
- **Surpass competitive coatings in cost, performance and ease of use**
- **Are gaining industry recognition as the defacto standard for stencil nano coatings**

NanoClear Technology

Proprietary Self Assembled Monolayer of Phosphonates (SAMP) can treat surfaces to impart fluxophobicity. The SAMP monolayer is comprised of a phosphonic acid and a repellent, carbon-based molecule:

- **Phosphonic acid reacts with the stencil surface and aperture walls and creates a covalent bond at the substrate: phosphonic acid interface**
- **The carbon group connected to the phosphonic acid is the functional mono layer**
- **The monolayer is less than 5 nanometers thick**



Less than 5 minutes to apply

NanoClear Primer (Part A)

Use: Cleaning Stencils

Directions: Wear protective gloves (such as DEK Nitrile Gloves www.dek.com)

For Best Results:

Step 1: Take stencil from package or from automated stencil washer and wipe stencil underside with Part A for 30 seconds and leave for 30 seconds

Step 2: Rinse with running water for at least 1 minute (For best results use DI or distilled)

Step 3: Wipe dry with clean room wipe

Treats Only One Stencil

If no rinse water is available then for:

Stainless Steel: Clean in Stencil Washer or wipe with IPA/Water Cloth (Do not use part A)

Nickel: See DEK Representative for OEM Applied Treatment

Warnings:

“Warning: May cause eye or skin irritation. Wear safety gloves when using product. Harmful if swallowed. Keep out of reach of children. In case of eye or skin contact, rinse thoroughly with water.

NanoClear Coating (Part B) “Open and Use Immediately”

Use: Applying Flux Repellant (NanoClear) Coating

Directions: Wear protective gloves (such as DEK Nitrile Gloves www.dek.com)

Step 1: Complete Part A Instructions

Step 2: Open Part B, use immediately, wiping NanoClear (Part B) onto stencil underside for at least 30 seconds

Step 3: Remove excess with clean room wipe

Treats Only One Stencil

Warnings:

“Warning: Flammable. Contains Ethanol. May cause eye or skin irritation. Wear safety gloves when using product. Harmful if swallowed. Keep out of reach of children. In case of eye or skin contact, rinse thoroughly with water.

When to reapply?

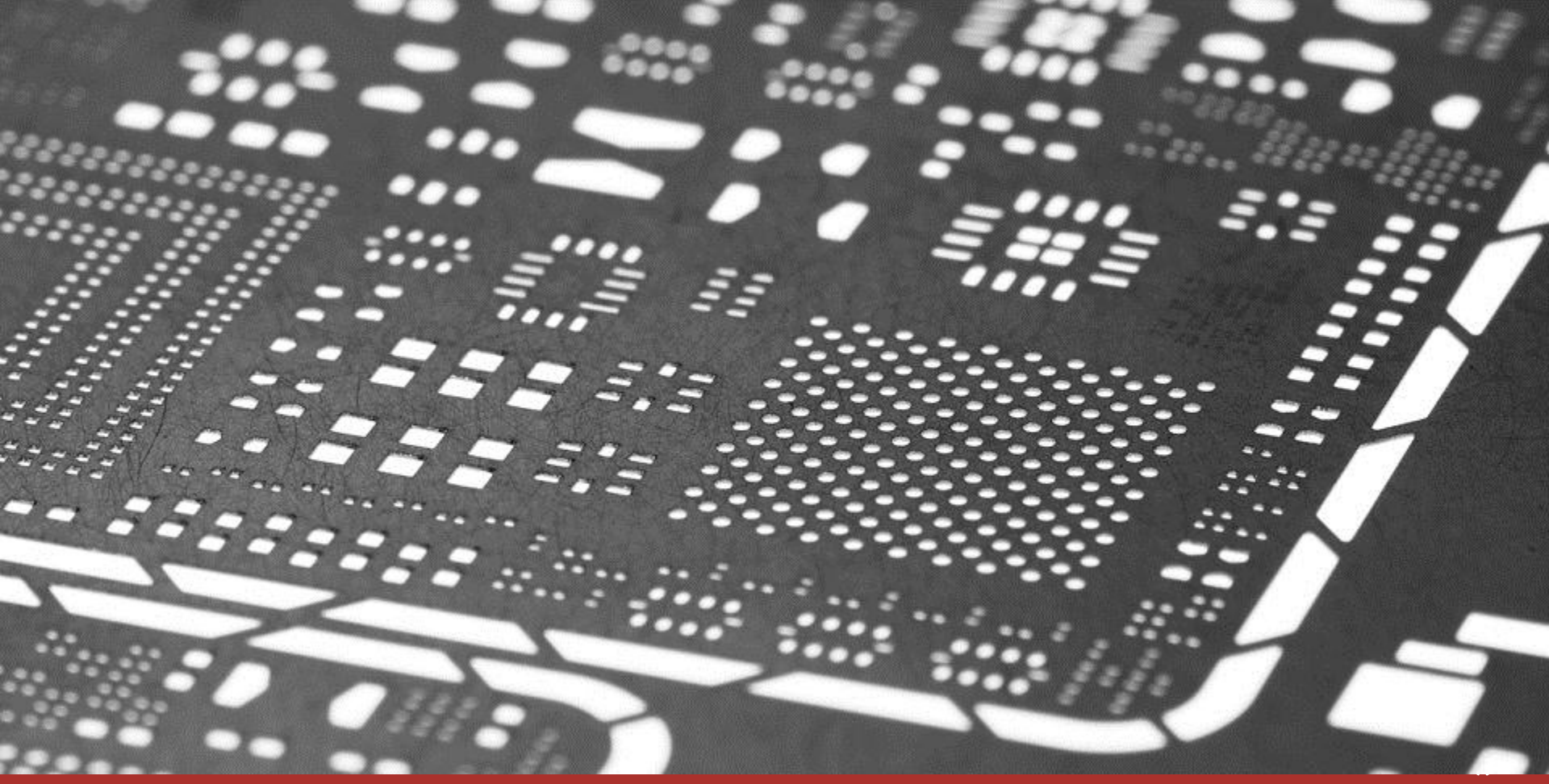
- **Factors that wear the NanoClear coating**
 - Solvent or dry wipe
 - Abrasiveness of paper
 - Wipe frequency
 - Stencil cleaning chemistry and process
- **Test**
 - Write on it with a Dyne test pen– it will beads up
 - If it beads water like a newly waxed car – it is still working
- **Reapplication**
 - Can be reapplied anytime. Will only stick to area not already covered (new, scratch, etc)

Customer benefits

- **Reduces defects**
 - Reduces the ability of solder paste to stick to apertures and bottom side of the stencil
 - Improves the cleaning result of the USC
 - Improves the first pass yield
- **Increases efficiency**
 - Reduces the frequency of under screen cleaning
- **Reduces costs**
 - Less cleaning needs less consumables
 - Easy to apply

Product differentiators

- **Easy application**
 - Less than 5 Minutes
- **Can be applied to new and existing stencils**
 - Coating can be done locally at any site globally
 - Can be re-applied if needed
- **Experienced Technical Support**
- **Excellent Supply Chain System**
- **Outstanding return on investment**
 - Pays for itself in minutes



Sales Contact

Marius Popitiu – Regional Distributor Manager Europe

marius.popitiu@asmpt.com

+40 722 692 108