

# Micro•Wipe™ Stencil Rolls

## Switch to Solventless Stencil Wiping and Slash SMT Printing Costs While Boosting Quality

- A Totally New Type of Stencil Wiping Fabric •
- Superior Absorbency Lifts More Solder Paste •
- Stronger, Longer, Harder Fibers Means Less Lint in Paste •
- Boost Yields While Lowering Costs • Patent Pending •

### General Information

Since the start of the surface mount revolution in electronics production, *Micro•Wipe™ stencil rolls* from Micro Care have been the industry's benchmark for quality stencil rolls. Now, Micro Care takes the industry to the next level with DuPont's newest stencil cleaning fabric, Sontara® Cleanmaster™ FP. Engineered specifically for lead-free applications and/or fine-pitch applications, this new paper increases throughput while reducing defects and lowering costs.

### About the Paper

The *Micro•Wipe* paper is different from traditional stencil papers. Low-quality rolls are made of cheap fibers glued together. During use, the glues dissolve and the weak fibers shred, leaving lint on the stencil and failing to clean.

A better choice is DuPont's Sontara material which uses a hydroentangled mix of both cellulose and polyester. Bonded together without glues, the cellulose absorbs the solder paste while the polyester provides strength. This delivers quality stencil wiping in less critical SMT applications.

But the best choice is *Micro•Wipe FP* rolls. These rolls feature a hydroentangled mesh of a durable, absorbant polymer related to synthetic rayon. *These new rolls*

*are 10 times cleaner than classic Sontara.* As such, *Micro•Wipe FP* rolls are stronger, lint less, absorb more paste and deliver more consistent cleaning. Most importantly, these fibers are strong enough to eliminate the need to clean with solvents. This dramatically boosts fine pitch yields while lowering costs.

### Wipe Without Solvents

Many benefits come from the new FP rolls. Perhaps the most important is the ability to wipe without solvents.

While all other stencil papers require solvents for effective cleaning, *Micro•Wipe FP* rolls are sufficiently strong and absorbant they can clean stencils without using solvents. As the photographs on Page 2 illustrate, *Micro•Wipe FP* removes paste without leaving fibers. This is a stencil printing breakthrough.

Eliminating solvents avoids a source of solder paste contamination, and it has been demonstrated that stencils cleaned without solvents produce fewer defects and requiring less rework than solvent-based stencil wipes. In addition, eliminating solvents shortens the cleaning cycle and reduces paper consumption. Obviously, it also avoids the cost of buying, storing, using and disposing of the solvent. No other stencil wiping product has been proven to be able to clean reliably and cost-effectively without solvents.



*Micro•Wipe™ FP Stencil Rolls are available in a wide variety of stencil rolls and configurations, and fit on most stencil printers including DEK, MPM, Ekra, Samsung, Panasonic and many others. The paper also is available in flat wipes.*



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**Other Benefits**

**Clean Less, Print More** — The new rolls boost throughput by reducing the number of time-wasting cleaning cycles. As a general rule, each cleaning cycle avoided creates time for up to five printing cycles. In addition, there are fewer pauses for manual stencil cleaning. At a major PCB subcontractor, *Micro•Wipe FP* rolls boosted production from 32 to 55 boards per hour – a 60% increase in productivity.

**Higher Yields** — In a large-scale trial with five SMT lines switching to FP paper pushed the defect-free yield as measured at functional test to 99.55% from an average of 97.25% — an 83% reduction in defects. A large subcontractor in Europe found that FP rolls eliminated 35% of their SMT defects at functional test.

**Reduce Spending on Rolls** — *Micro•Wipe FP* rolls cost more to buy than standard rolls but actually cost less to use. In most environments, *Micro•Wipe FP* rolls last twice as long as old-style rolls. This produces a savings of about 20%.

**Eliminate Rework** — A reduction in SMT defects (higher yields) produces a reduction in rework. One OEM in Mexico estimated switching to FP paper will eliminate 13 people per shift doing rework. Another OEM in Europe found the FP paper improved their SMT yield from 95% to 99%, eliminating 150 in rework labor expense each shift

**Technical Details of Common Stencil Roll Papers**

| Characteristic                                  | Polyester & Glue Rolls | Micro•Wipe “E” Rolls | Micro•Wipe FP Rolls |
|---|------------------------|----------------------|---------------------|
| <i>Photo on Page 3:</i>                         | A                      | B                    | C                   |
| <b>Weight</b>                                   |                        |                      |                     |
| Ounces/Yd <sup>2</sup>                          | 1.1                    | 1.5                  | <b>1.9</b>          |
| Grams/m <sup>2</sup>                            | 31                     | 50                   | <b>64</b>           |
| <b>Avg. Thickness (mils)</b>                    | 11.0                   | 10.7                 | <b>13.0</b>         |
| <b>Tensile Strength</b>                         |                        |                      |                     |
| Pounds/Inch                                     | 16.2                   | 25                   | <b>28</b>           |
| Kilos/cm  | 18.1                   | 28                   | <b>31</b>           |
| <b>Absorption</b>                               |                        |                      |                     |
| H <sub>2</sub> O cc/100 cm <sup>2</sup>         | 23                     | 29                   | <b>39</b>           |
| <b>Linting</b>                                  |                        |                      |                     |
| >(0.5 microns/m <sup>2</sup> )x10 <sup>3</sup>  | n/a*                   | 1130                 | <b>127</b>          |
| <b>Contains Glues or Resins?</b>                | Yes                    | <b>No</b>            | <b>No</b>           |
| <b>Residues from Fibers and Dissolved Glues</b> | 0.98%                  | <b>0.07%</b>         | 0.08%               |

These table above shows the best result in **boldface**. Selecting a stencil roll with the best or optimal characteristics will reduce printing costs and boost yields.

\* Note: This result is from a standardized test performed on dry paper. Stencil printing wets the paper, dissolving the glues that hold this paper together, so any results would not applicable in side-by-side comparisons.

**Move Towards Six Sigma** — Inexpensive stencil rolls undermine efforts to achieve six sigma quality in SMT production. In one thoroughly documented case, polyester-and-glue rolls delivered a CPk of only 0.88 while the *Micro•Wipe FP* rolls produced a CPk index of 1.70 (which is better than five-sigma quality). An improvement of this magnitude is rare in a mature production environment, and highlights the importance of stencil wiping to high-quality SMT production.

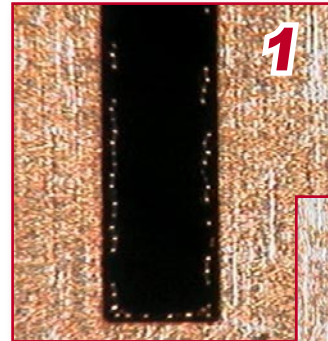
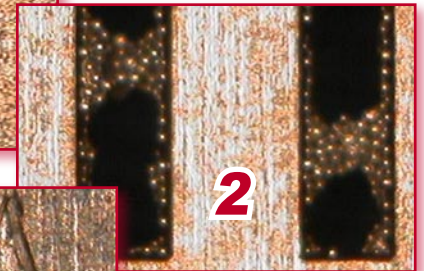


Photo 1 shows the test stencil after cleaning with Sontara® “E” paper, 20 printing cycles, wiping wet with IPA. This is an excellent result: clean aperture, no fibers, no excess solder paste.



Photos 2, 3 and 4 show the same stencil after 20 printing cycles, wiping without IPA. Easily visible are clogged apertures, fibers from the paper, and excess paste on the stencil, all of which can cause defects in the finished boards



Photo 5 shows the same stencil after 20 printing cycles, wiped dry with *Micro•Wipe FP* paper. This and other tests proved it is feasible, fast and reliable to wipe stencils without using solvents. This capability is available only with *Micro•Wipe FP* paper.

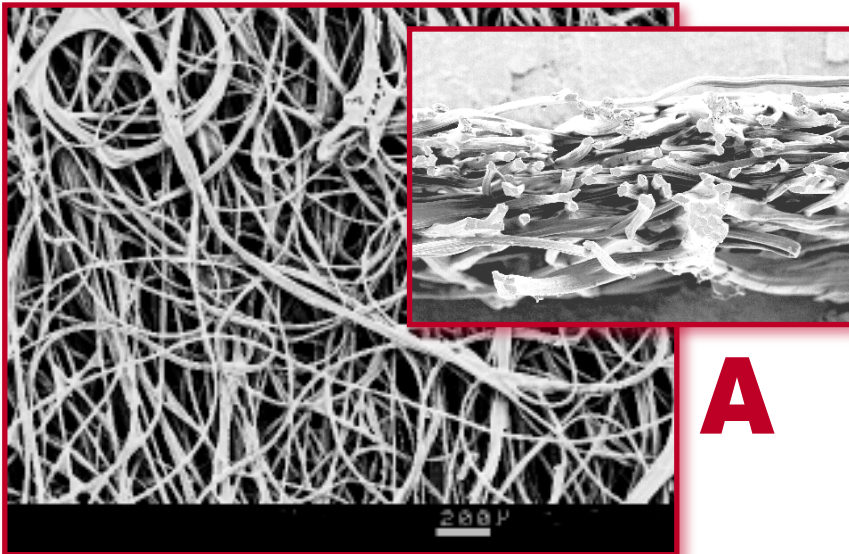
**Other Stencil Cleaning Fabrics**

In addition to the *Micro•Wipe FP* rolls, Micro Care continues to offer other fabrics. The original Sontara is available for all the major printers. Sontara “E” is a thinner fabric, permitting more effective use of the vacuum feature. Micro Care also produces rolls using the “C” grade of for less critical SMT applications.

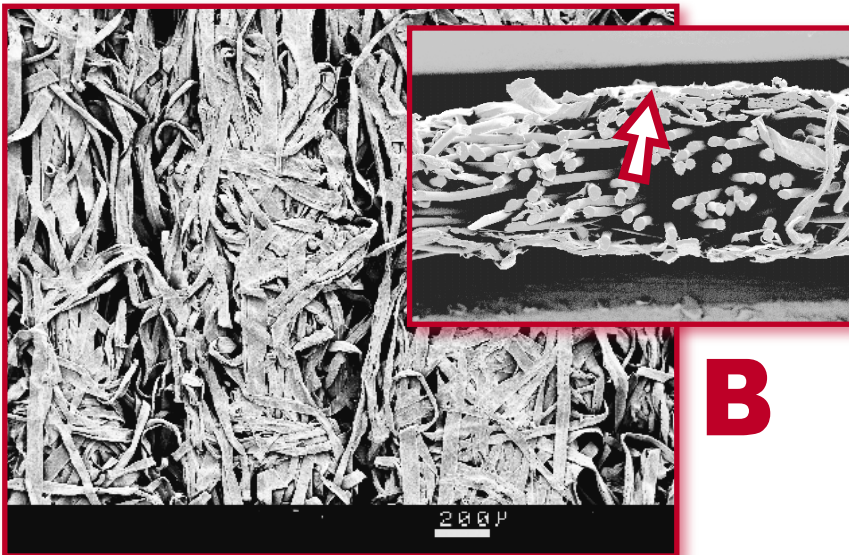
All of these are available in every popular configuration, with all the widths, lengths and configurations required.

# The Different Fibers in Stencil Rolls Affect Stencil Printing Quality

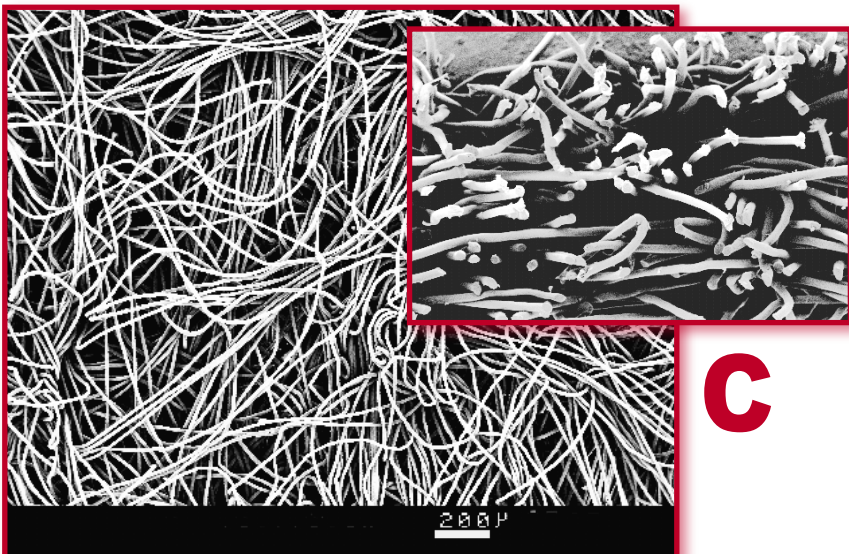
*These microphotographs, made with an electron scanning microscope, illustrate the differences in stencil wiping materials. The smaller inset photos are cross-sections of each material enlarged 200 times. The larger pictures are the same material enlarged 50 times.*



**A** This is a resin-bonded rayon and polyester (PET) material from a well-known US manufacturer. (The resin is a type of glue, used to bond the fibers together.) The material tends to be thin, hard-surfaced (due to the glue) and less absorptive. Most of the pores in the fibers are clogged with resin. In many cases, the resins are dissolved by solvents and are transferred to the PCB during printing. In addition, as the resin is dissolved the paper weakens, shredding and linting on the jagged aperture edges. This paper is completely unsuited for fine-pitch or lead-free applications.



**B** This is the “classic” Sontara material. It is hydroentangled mesh of cellulose and polyester fibers. The flat, linguini-like fibers are the cellulose stands which absorb solvent and paste. The polyester lies below the cellulose and provides strength. No resins, binders or glues are used in this material. But the fragile cellulose fibers shred easily (notice filaments popping up from the surface at the arrow) which increases linting on stencils and apertures.



**C** The consistent, regular shape of the synthetic fiber found in Micro•Wipe FP stands in sharp contrast to the other roll wipes. The structure is open, porous and free of glues and binders. The fibers are strong and identical, providing very consistent cleaning. This paper greatly resists shredding or linting and is sufficiently porous to work well with the vacuum-wiping systems on the stencil printers. For lead-free solder paste, this is the best stencil wipe on the market today.

Fabric photographs courtesy DuPont Corp.  
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# Part Numbers and Availability

## FP Stencil Wipes for MPM Speedline Systems

- MCC-101DF** • Standard roll, 33 feet (9.8 meters) long, 17.5 in. (440 mm) of paper on 18 inches (450 mm) wide core, 2.5 in. O.D., 0.75 in. I.D., 0.5 in. core extension on one end, paper core. Replaces MPM Part Number P1485 for UP2000, UP3000, AP21S, AP23S, AP24 and AP25S systems. and most other MPM printers.
- MCC-J140DF** • Small MPM roll. 33 feet (9.8 meters) long, 9 inches (230 mm) wide, all other measurements the same as -101DF.
- MCC-J232DF** • Super-wide core for the biggest MPM machines. 33 feet (9.8 meters) long, 22.44 in. (570mm) wide, but only 17.50 in. (440mm) paper centered on core; .75 in. (20mm) inner diameter, cardboard core.

### Other Papers

- MCC-101TEA** • Same as -101DF, but using the Sontara® "E" paper.
- MCC-101TX** • The jumbo "Texas"-sized roll. Same as -101TEA with Sontara® "E" paper but with extra length on the roll; 50 feet (15.3 meters) long for fewer change-outs. This configuration is not available in FP paper.
- MCC-J109EA** • 22 feet long, 16.15 inches wide, 2.5 inch O.D., paper core 1.5 inch I.D. Replaces all Quad/SMTech rolls.
- MCC-101TC** • Same as -101DF, but the affordable "C" paper. Not a Sontara® material. Not for fine-pitch stencils

## FP Stencil Wipes for DEK Systems

- MCC-105DF** • Standard DEK Roll, 30 feet (9 meters) long, 20.87 in. (530 mm) wide, plastic core, 520mm paper, .25 inch (5 mm) extension on both sides. For all modern DEK systems.
- MCC-J119DF** • The "narrow" DEK roll, for stencils with smaller print areas. This roll has the same 30 feet (9 meters) of paper, but only 15.75 inches (400 mm) wide with long core extensions on both sides.

### Other Papers

- MCC-105EA** • Same as -105DF, but with Sontara "E" paper.
- MCC-105C** • Same as -105DF, but using the affordable "C" paper. Not a Sontara® material. Not for fine-pitch applications.

## FP Stencil Wipes for Fuji Systems

- MCC-J189DF** • Standard Fuji roll. Length 30 feet (9 meters), width 15.75 inches (400mm), outer diameter 2.5 in. (65mm); core inner diameter 1 in. (25mm); cardboard core with four notches on core end.
- MCC-J148DF** • Fits big Fuji systems - 500 mm width. Length 30 feet (9 meters), core inner diameter 1 in. (25mm); cardboard core with four notches on core end

## FP Stencil Wipes for KME Systems

- MCC-J205DF** • Standard size for KME, 270 mm width

## FP Stencil Wipes for Samsung Systems

- MCC-J299DF** • Standard Samsung roll. Length about 30 feet (9 meters), width 17.50 inches (445 mm) on 18.0 inch (460 mm) core; roll outer diameter 1.97 in. (50 mm); cardboard core. NOTE: Samsung factory rolls are on a very unusual, notched plastic core. This is a less durable core.

## FP Stencil Wipes for EKRA Systems

- MCC-J174DF** • Fits all Ekra systems; 500 mm width
- MCC-J178DF** • Fits all Ekra systems; 450 mm width
- MCC-J184DF** • Fits all Ekra systems; 400 mm width
- MCC-J171DF** • Fits all Ekra systems; 350 mm width

## FP Stencil Wipes for Panasonic Systems

- MCC-108DF** • Standard size Panasonic roll for smaller printers, 32 feet (9.8 meters) long, 14.17 in (360 mm) wide, no extensions on either side, outer diameter 4.5 in (115mm), paper core, inner diameter of 1.5 in. (40mm).
- MCC-J154DF** • Slightly narrower Panasonic roll, but approx. 108 feet (32 meters) long, 13.75 in (350 mm) wide, no extensions on either side, outer diameter 4.5 in (115mm), paper core, inner diameter of 1.5 in. (40mm).
- MCC-J233DF** • Narrow paper on standard core. Approx. 108 feet (32 meters) long, 13.75 in (350 mm) wide core, but paper only 7.5 in (190 mm) wide; long extensions on either side, outer diameter 4.5 in (115mm), paper core, inner diameter of 1.5 in. (40mm).

## Stencil Wipes for Quad & SMTech Systems

- MCC-109DF** • Fits QUAD 400 and smaller
- MCC-J139E** • Fits QUAD 400 and smaller. Same as -109E, with out-of-paper marker
- MCC-J206DF** • For the Quad/SMTech/SigmaPrint 500; 20.67 in. (520mm) paper core, 5 mm cutbacks on both ends.

## FP Stencil Wipes for Yamaha Systems

- MCC-J240DF** • Standard Yamaha roll. Length about 120 feet (35 meters), width 16.75 inches (425 mm) on 16.75 inches (425 mm) core; roll outer diameter FIVE (5) in. (127 mm); narrow cardboard core with 1 inch (25 mm) inner diameter.

### Other Information

NOTE: Rolls available in the new FP fabric are designated with a part number ending in "DF." Part numbers using Micro-Wipe "E" and "C" fabrics are available; the paper designation is the suffix in the part number. "O.D." means "outer diameter" and "I.D." means "inner diameter." Hundreds of printers, sizes and configurations are available on a special order basis. Call Micro Care for more details and part numbers.

Rolls are priced per roll; rolls are individually wrapped, packed ten rolls per case. Unlimited shelf life. The DuPont material can vary in thickness, so maintaining the outer diameter of the roll takes precedence over the length of the roll.

DISCLAIMER: Micro Care does not guarantee the accuracy of this data and assumes no liability for damages incurred using it. Liability is limited to the replacement of product. Specifications subject to change without notice.



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