



**Pyralux® TK.  
New High Speed Flex  
from DuPont**

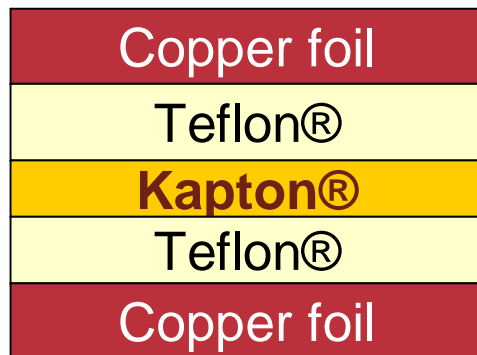
Arundel February 2010



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# Introduction to Pyralux® TK: High Speed Flex

- Developed new low Dk, low Df flex laminate (FCCL) with compatible low Dk, low Df bondply.
- Dielectric for clad and bondply is a 3-layer composite: Kapton® Core and Teflon® outer layers.



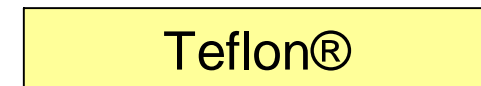
Clad

Kapton® 0.5, 1, 2, mils  
Teflon® 0.5, 1, 2, mils



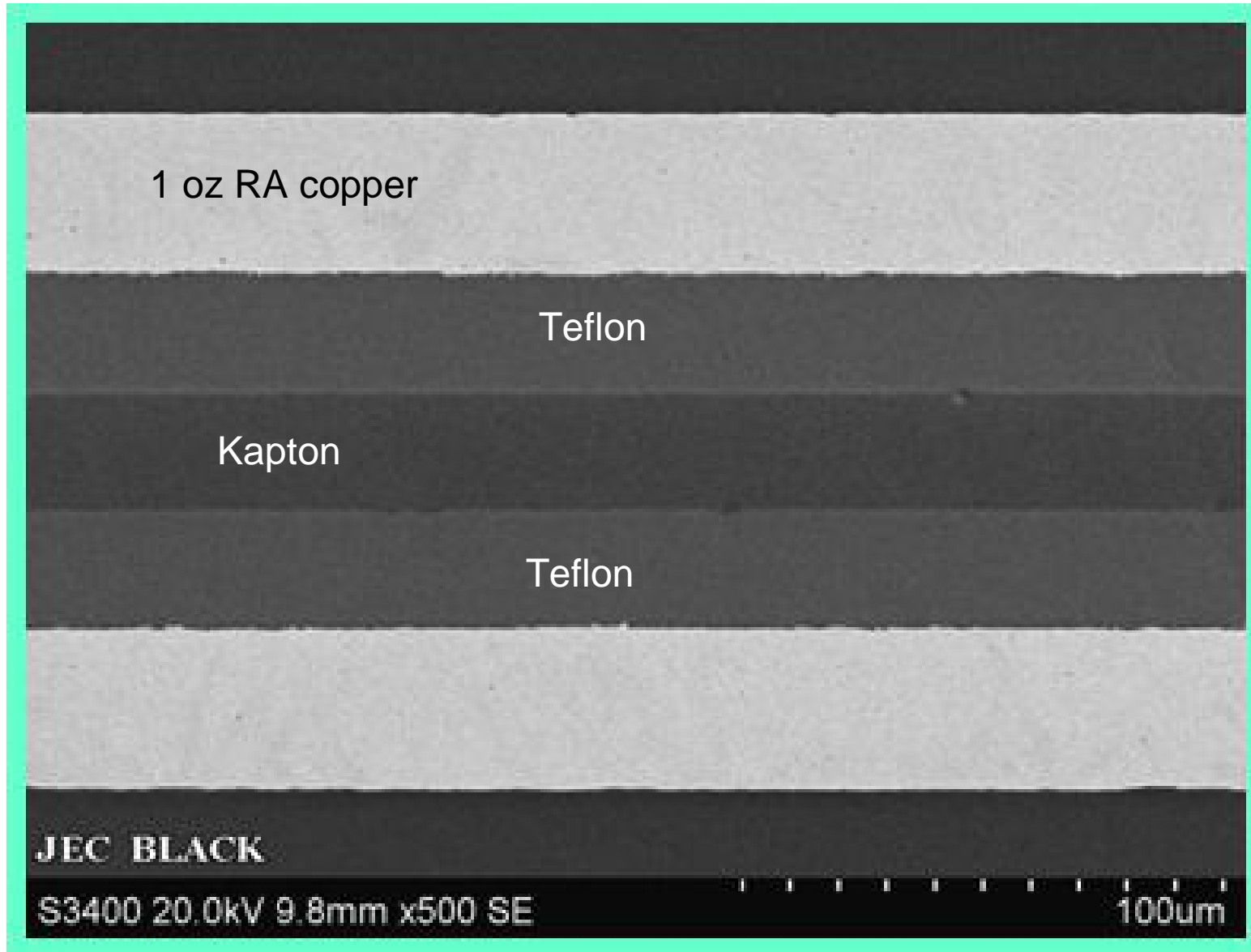
Bondply

Bondply and sheet adhesive based on Kapton® and lower melt-point Teflon®.



Adhesive

# Pyralux® TK Clad Cross-Section



# Material Properties Required for High Speed Controlled Impedance Flex

## Lower DK (dielectric constant)

- Allows thinner dielectric and/or wider conductor, and easier control of impedance, especially at higher speeds.

## Lower DF (low dissipation factor, low loss)

- Allows longer conductors because of lower insertion loss or attenuation.

## Lower Moisture Absorption

- Allows tighter control of impedance (lower Df and variation of Df with environment).

## Tighter thickness tolerances

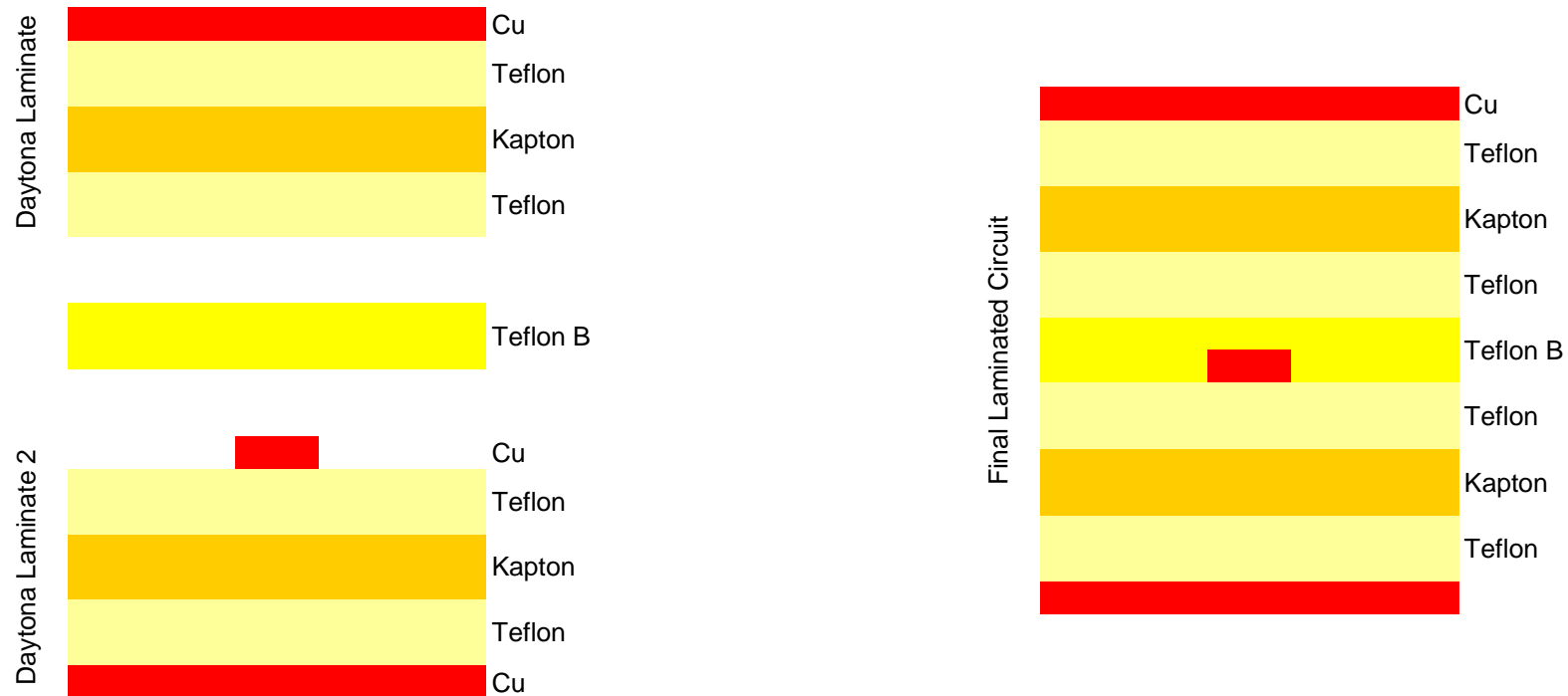
- Allows tighter impedance control within and between lots.

## Properties and Benefits:

Feature	Benefit	Quantified Benefit
<b>Low DK</b> 2.5 vs. PI/Acrylics' 3.4	Thinner dielectric Wider Conductors	33% thinner → 140% more flexible; tighter radius 44% wider conductors (stripline)
<b>Low DF</b> 0.002 vs. Acrylics' 0.02	75% reduction in DF give lower attenuation.	100% - 200% longer circuits (design dependent)
<b>Lower Moisture absorption</b> 0.3% vs. 1.1% or 2.7%	Keeps the DK and DF consistent in a variety of humidity conditions.	Reduced climate-control needs in end-use; easier control of signal integrity
<b>Tight Thickness Tolerance</b> vs. LCP, initially and after lamination.	Predictable impedance performance between and within lots.	Easier control of signal integrity; enjoy high-yield, wide-latitude press conditions.

# Stripline Option 1:

Two TK clads, Pyralux® TK sheet adhesive film

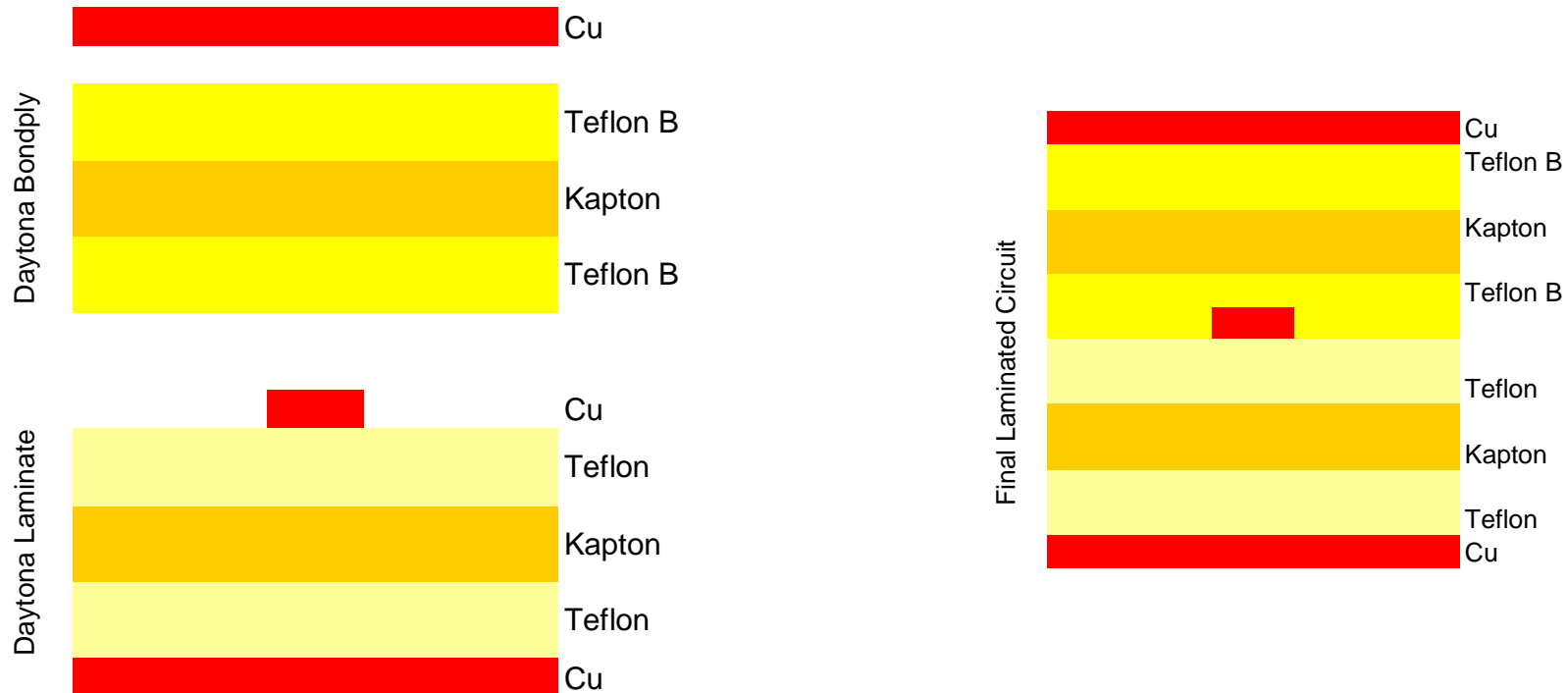


Teflon® B is a lower melting Teflon® requiring 280C (535F) lamination.

(Can use any coverlay on outside layers.)

## Stripline Option 2:

Pyralux TK clad, Pyralux® TK bondply, one Cu foil.



Teflon® B is a lower melting Teflon® requiring 280C (535F) lamination.

(Can use any coverlay on outside layers.)



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