

HIGH SPEED? HIGH FREQUENCY? AND FLEXIBILITY? NOW YOU CAN HAVE IT ALL.

DuPont™ Pyralux® TK flexible circuit material: Frequently Asked Questions

Q: What is DuPont™ Pyralux® TK?

A: DuPont™ Pyralux® TK combines DuPont™ Teflon® fluoropolymer and DuPont™ Kapton® polyimide film to create ultra-thin laminate and bondply constructions for unique flexible, high speed and high frequency applications.

Q: Is Pyralux® TK available for purchase today?

A: Pyralux® TK is available for purchase today. Please contact your nearest [regional representative](#) or [contact us directly](#).

Q: What is the size of Pyralux® TK laminates?

A: Pyralux® TK clads are supplied in a sheet form, with standard dimensions of 24" x 36", 24" x 18", and 12" x 18" (610 x 914mm, 610 x 457mm, and 305 x 457mm).

Q: What copper foils are available with Pyralux® TK?

A: Today, Pyralux® TK Copper Clad Laminate is commercially available with single-treat Annealed-wrought (RA) copper foil. A low profile electro-deposited (ED) copper foil has just been qualified by DuPont.

Q: How does Pyralux® TK compare to rigid Teflon® products?

A: The analysis discussed in the [Pyralux® TK webinar](#) was completed on materials offered at both 50 um and 100 um thicknesses because the target applications for Pyralux® TK are high speed flexible circuitry.

Q: Why do the thinner circuits made from either Pyralux® AP or Pyralux® TK exhibit higher signal loss as shown by the eye diagrams (highlighted in the [Pyralux® TK webinar](#)) than thicker circuits made from the same materials?

A: It is important to understand that thinner circuits generally have higher loss than thicker circuits. Many factors influence this. Thinner circuits must have narrower lines to achieve the same impedance and thus have higher resistance. Also, for a microstrip structure, more of the electric field propagates in the air for thicker structures. In the webinar presentation, all the comparison data for eye diagrams were based on like thicknesses.

Q: What variation is expected in the finished flex dielectric thickness and dielectric constant?

A: The raw material properties of flex materials are very consistent. Since there is no glass reinforcement, the dielectric constant depends only on the formulation of the polymers. As a result, the dielectric constant does not vary in any significant way. The dielectric thickness has a tolerance of +/-10%, but in reality the dielectric thickness is generally tighter than that. The variation of finished flex materials will depend on the capabilities of the fabricator, so this is a value that needs to be confirmed with any manufacturing partner you choose.

Q: Can Pyralux® TK be used in rigid flex constructions or in rigid FR-4 board constructions?

A: Pyralux® TK was originally developed for controlled impedance flex and multilayer flex. However, there are several evaluations underway at fabricators to use Pyralux® TK in rigid flex. We also have a couple of evaluations of Pyralux® TK in rigid board applications where Pyralux® TK will be mixed with other materials. Most of these rigid/flex and rigid evaluations were requested by OEMs. We have tested the adhesion of epoxy and polyimide prepregs to the Pyralux® TK clad dielectric surface and found very good adhesion.

Q: Are you planning on offering a Pyralux® TK coverlay?

A: We are developing a Teflon® and Kapton® based coverlay for Pyralux® TK. It should be ready for the first round of Beta testing 1H2012. This new coverlay will require high temperature lamination, similar to Pyralux® TK bondply. The Beta test accounts will be selected based on their interest in high speed applications.

Q: What is the operating temperature for the Pyralux® TK system?

A: Pyralux® TK was developed for high speed controlled impedance flex applications. There has been some interest in using Pyralux® TK for high MOT applications because the polymers can withstand high temperature as shown in the Decomposition Temperatures (see [data sheet](#)). However, our initial testing based on the UL MOT test and the new IPC Service temperature test suggests that Pyralux® TK will not meet most of the needs for a high temperature flex material. So far, it is clear that Pyralux® AP will be much better than Pyralux® TK clads for use in high operating temperature applications.

Q: What is the moisture absorption for Pyralux® TK?

A: The percent moisture absorption for the Pyralux® TK clad and bondply are listed in the [data sheet](#). This number shows the maximum amount of water by weight the product will absorb at 100% humidity. This is well below the moisture absorption of most flex materials. However, multilayer constructions containing Pyralux® TK clads and bondply will need to be baked before solder reflow of solder floats. The hold time between bake and assembly will be dependent of the circuit complexity and the environment.

Q: Where can I get information on processing Pyralux® TK?

A: Please visit our website www.pyralux.com/tk where you can find the answer in the [data sheet](#) or processing guide.

FOR MORE INFORMATION

For more information about DuPont™ Pyralux® TK, please visit pyralux.com/tk or [contact us](#).

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