



What are the Differences between PEN Film and PET Film?

Tekra Fundamentals

What is PEN film?

PEN film is short for polyethylene naphthalate, and fills the performance gap between polyester films and high performance polyimide films. [Teonex® PEN](#) film is the product of choice for harsh environment applications.

Teonex® PEN films should be considered a specialty product offering. They are manufactured in gauges from 1 mil to 10 mil. Based on volume, stocking programs can be established to lessen the impact of product availability and lead times.

Two of the more commonly referenced PEN film types are:

[Teonex® Q51](#): Standard

[Teonex® Q83](#): Low shrink

What are the key differences between PEN vs PET?

Teonex® PEN film has many superior properties such as strength, heat resistance, anti-hydrolysis, dimensional stability and low oligomer extraction. Because of these performance characteristics, PEN film has the potential to replace other engineering films, such as polyimide, with added cost performance. Teonex® also has good handling properties (similar to polyester film).

WHAT ARE THE DIFFERENCES BETWEEN PEN FILM AND PET FILM?

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Test Method	48 ga Mylar A PET Film	48 ga Q51 PEN Film
Physical Properties		
Elongation at Break MD	110%	90%
Elongation at Break TD	70%	85%
Tensile Strength TD	32 kpsi	38 kpsi
Thermal Properties		
Shrinkage MD (150°C)	2%	0.4%
Shrinkage TD (150°C)	1%	0%

What are common applications for PEN film?

- Flexible printed circuits
- Solar and PV cells
- Automotive
- Flexible heaters
- Electronic components
 - Capacitors
 - Electric insulation
 - Batteries
- Optical end uses

For more information, please visit www.tekra.com or call (800) 448-3572.