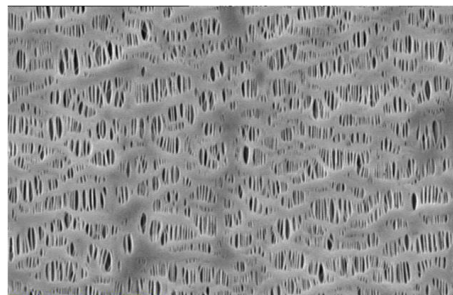


## Product Name & Description

Celgard® 1410  
14µm Monolayer Microporous Membrane (PP)

## Primary Applications

**High Power** Lithium Battery Systems; especially those that require exceptional energy density advantages



SEM images for illustrative purposes only

## Product Benefits

- Zero TD shrinkage reduces internal shorting
- Uniform pore structure with high chemical & thermal stability
- High porosity for excellent high-rate performance
- PP layer provides superior high temperature melt integrity compared to other polyolefin-based, uncoated separators as well as oxidation resistance
- Ultra-low electrical impedance

## Technical Data (Typical Properties)

Basic Film Properties	Unit of Measure	Typical Value
Thickness	µm	14
Gurley (JIS)	Seconds	185
Porosity (calculated)	%	43
TD Shrinkage @ 105°C / 1 Hour (typical)	%	0
MD Shrinkage @ 105°C / 1 Hour (typical / max)	%	0.4 / 0.7
TD Tensile Strength (typical / min)	Kg/cm <sup>2</sup>	150 / 100
MD Tensile Strength (typical / min)	Kg/cm <sup>2</sup>	1800 / 1000
Puncture Strength (typical / min)	Grams Force (gf)	290 / 200

## Packaging

Please contact your Celgard representative for more information on product roll lengths and slit widths.

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**WARRANTY:** This product is to be used only by persons familiar with its use. It must be maintained within the stated limitations. The product is warranted to be free of any manufacturing defects. No other warranty is expressed or implied. Purchaser assumes all responsibility for the use and safety of this product. To the best of our knowledge, the information contained herein is accurate. However, neither CELGARD, LLC nor any of its affiliates assumes any liability whatsoever for the accuracy or completeness of this information. Final determination of the suitability of any material and whether there is any infringement of patents is the sole responsibility of the user.

Users of any substance should satisfy themselves by independent investigation that the material can be used safely. We may have described certain hazards, but we cannot guarantee that these are the only hazards that exist. Review the Product Safety Data Sheet for environmental, health and safety information related to this product.

