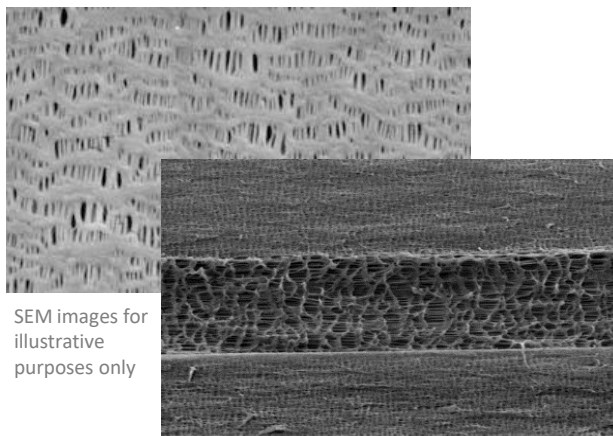


## Product Name & Description

Celgard® H1409  
14µm Trilayer Microporous Membrane (PP/PE/PP)

## Primary Applications

**High Power** Lithium Battery Systems; especially those that require exceptional safety and energy density advantages.  
Also an ideal substrate for coating, if required



## Product Benefits

- Zero TD shrinkage reduces internal shorting
- Uniform pore structure with high chemical & thermal stability
- High porosity for excellent high-rate performance
- PP outer layer provides high temperature melt integrity, oxidation resistance
- PE inner layer provides high-speed shutdown features
- Ultra-low electrical impedance

## Technical Data (Typical Properties)

Basic Film Properties	Unit of Measure	Typical Value
Thickness	µm	14
Gurley (JIS)	Seconds	210
Porosity (calculated)	%	45
TD Shrinkage @ 105°C / 1 Hour (typical)	%	0
MD Shrinkage @ 105°C / 1 Hour (typical / max)	%	1.7 / 6.0
TD Tensile Strength (typical / min)	Kg/cm <sup>2</sup>	160 / 100
MD Tensile Strength (typical / min)	Kg/cm <sup>2</sup>	2250 / 1100
Puncture Strength (typical / min)	Grams Force (gf)	330 / 240

## Packaging

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

### United States

Celgard, LLC  
13800 South Lakes Drive  
Charlotte, North Carolina  
28273 United States  
Toll Free (US):  
1-800-235-4273  
Phone: +1 704-588-5310  
Fax: +1 704-587-8585

### France

Celgard Sales Office  
Daramic SAS  
BP 90149  
25 Rue de Westrich  
Sélestat Cedex  
67603 France  
Phone: +33 3 88 82 41 08  
Fax: +33 3 55 03 59 03

### China

Sales & Technical Service  
Celgard LLC  
3201 Room, Galaxy Century  
Building A, No 3069  
South of Caitian Rd  
Futian District, Shenzhen  
518-000 PR China  
Phone: +86 755-8660 8688  
Fax: +86 755-8660 8699

### Korea

Polypore Korea, Ltd.  
B-506 10, Baekseokgongdan  
1-ro,  
Seobuk-gu, Cheonan-si,  
Chungcheongnam-do, 31094  
Republic of South Korea  
Phone: +82 419056001  
Fax: +82 419056099

### Japan

Polypore K.K.  
Hibiya Mitsui Tower  
1-1-2 Yurakucho,  
Chiyoda-ku, Toyko  
100-0006 Japan  
Phone: +81 3-6891-3750  
Fax: +81 3-6891-3769

[www.celgard.com](http://www.celgard.com)



**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.

