

#### Product Name & Description

Celgard® H1409

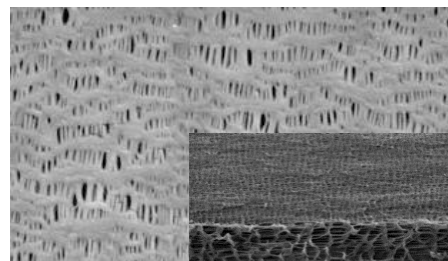
14µm Trilayer Microporous Membrane (PP/PE/PP)

#### Primary Applications

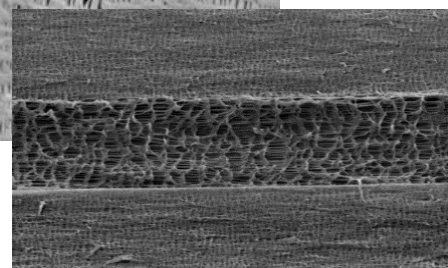
**High Power** Lithium-Ion Battery Systems; especially those that require additional safety advantages  
Automotive EDV, ESS

#### 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
- Low electrical impedance



SEM images for illustrative purposes only



#### Packaging

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

#### 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     |

### Manufacturing Locations

#### United States

*Headquarters, Manufacturing and R&D at Charlotte*

13800 South Lakes Drive  
Charlotte, North Carolina  
28273 United States

Phone: +1 704-588-5310

Fax: +1 704-588-5319

*Manufacturing and R&D at Concord*

390 Business Boulevard  
Concord, North Carolina  
28027 United States

Phone: +1 704-720-5200

Fax: +1 704-720-5211

#### China

*Manufacturing & Distribution*

Celgard (Shanghai) Materials Technology Co., Ltd.

Building 2, 180 North Ruying Road,

China (Shanghai) Pilot Free Trade Zone,

Pudong New District, Shanghai, 200131 China

Phone: +86 (21) 5028 0001

### Sales Offices

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#### Korea

*Sales & Technical Service*

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#### India & South Asia

*Sales & Technical Service*

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