

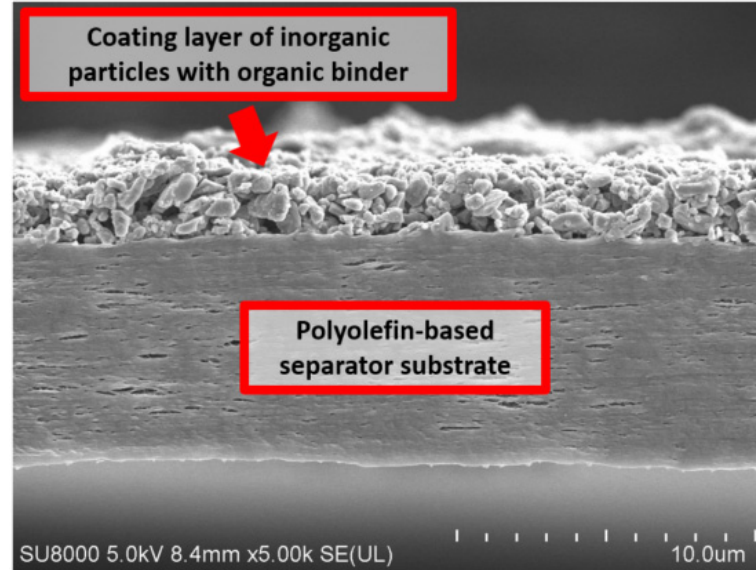
Exhibit 18

Exemplary Infringement Claim Chart for U.S. Pat. No. 7,709,152 – ATL Cell 844297

Claim 1	Representative Accused ATL Cell 844297: ATL Cell 844297
<p>[1pre] An organic/inorganic composite separator, comprising:</p>	<p>Representative accused products include, but are not limited to, ATL Cell 844297:</p> <div data-bbox="869 381 1623 686" data-label="Image">A photograph of an ATL Cell 844297 battery. Two labels are visible, each with a barcode and identification numbers. The labels are highlighted with red boxes. The top label contains the text: -ATL, 17.02Wh, 3.8V, +844297, J096503R04F7. The bottom label contains the text: -ATL, 17.02Wh, 3.8V, +844297, J096503R04F7.</div> <p>Photograph of ATL Cell 844297.</p> <p>Each cell includes an organic/inorganic composite separator. For example, as shown in the SEM image below, the ATL Cell 844297 includes a composite separator having a coating layer and a polyolefin-based separator substrate:</p>

Claim 1

Representative Accused ATL Cell 844297: ATL Cell 844297

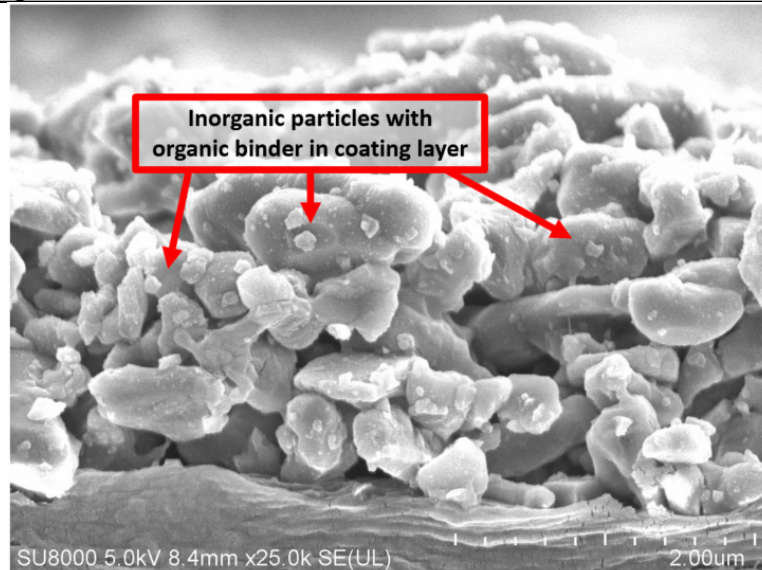


Cross-section SEM image at x5k.

The coating layer, which is made up of inorganic particles and organic binders, is porous:

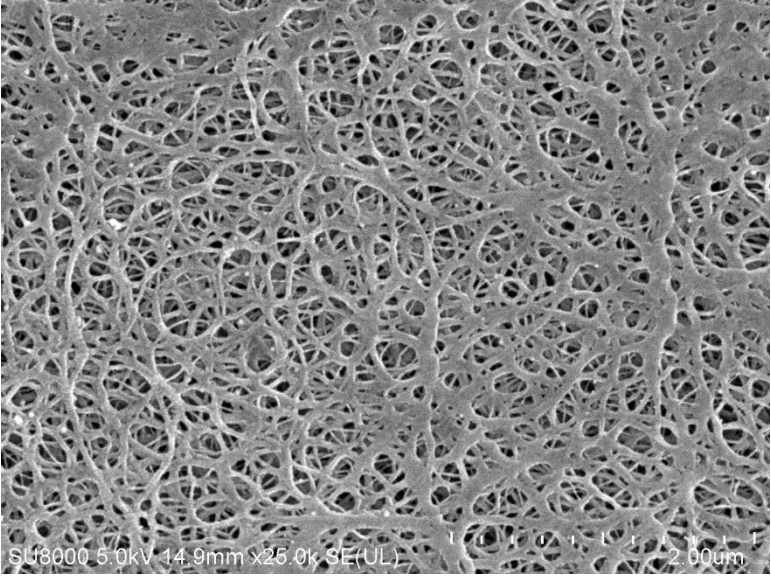
Claim 1

Representative Accused ATL Cell 844297: ATL Cell 844297



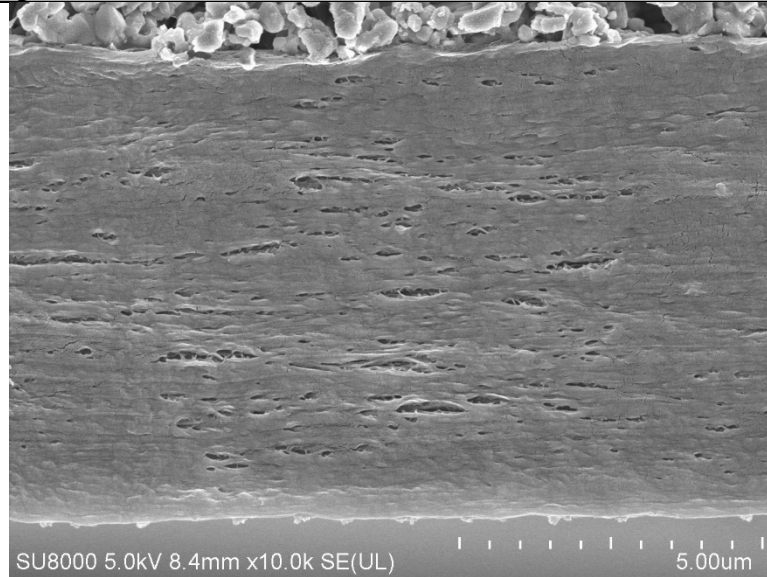
Cross-section SEM image at x25k.

The polyolefin-based substrate is also porous:

Claim 1	Representative Accused ATL Cell 844297: ATL Cell 844297
	 <p data-bbox="1045 808 1444 841">Plan-view SEM image at x25k.</p>
<p data-bbox="205 883 562 954">[1a] (a) a polyolefin porous substrate having pores; and</p>	<p data-bbox="598 883 1885 954">Each ATL Cell 844297 includes a polyolefin porous substrate having pores. A cross-sectional view of the polyolefin porous substrate having pores can be seen below:</p>

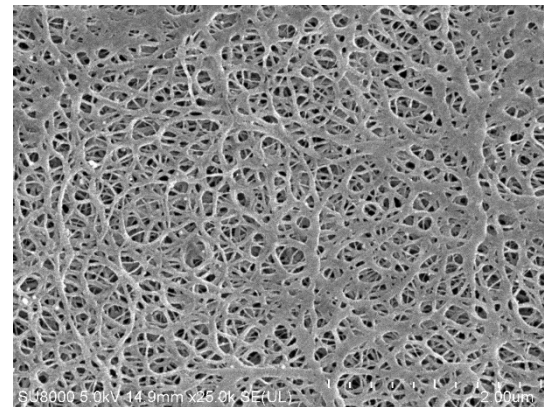
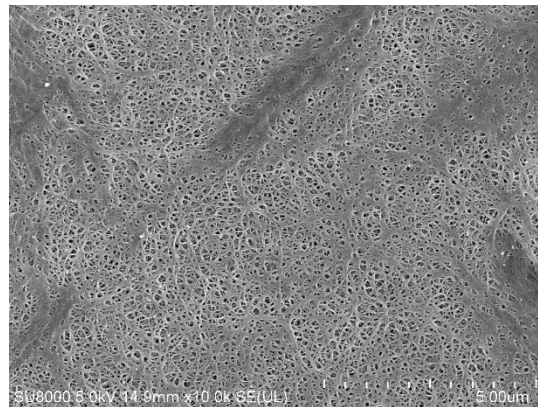
Claim 1

Representative Accused ATL Cell 844297: ATL Cell 844297



Cross-section SEM image at x10k.

Plan views of the polyolefin porous substrate having pores can be seen below:

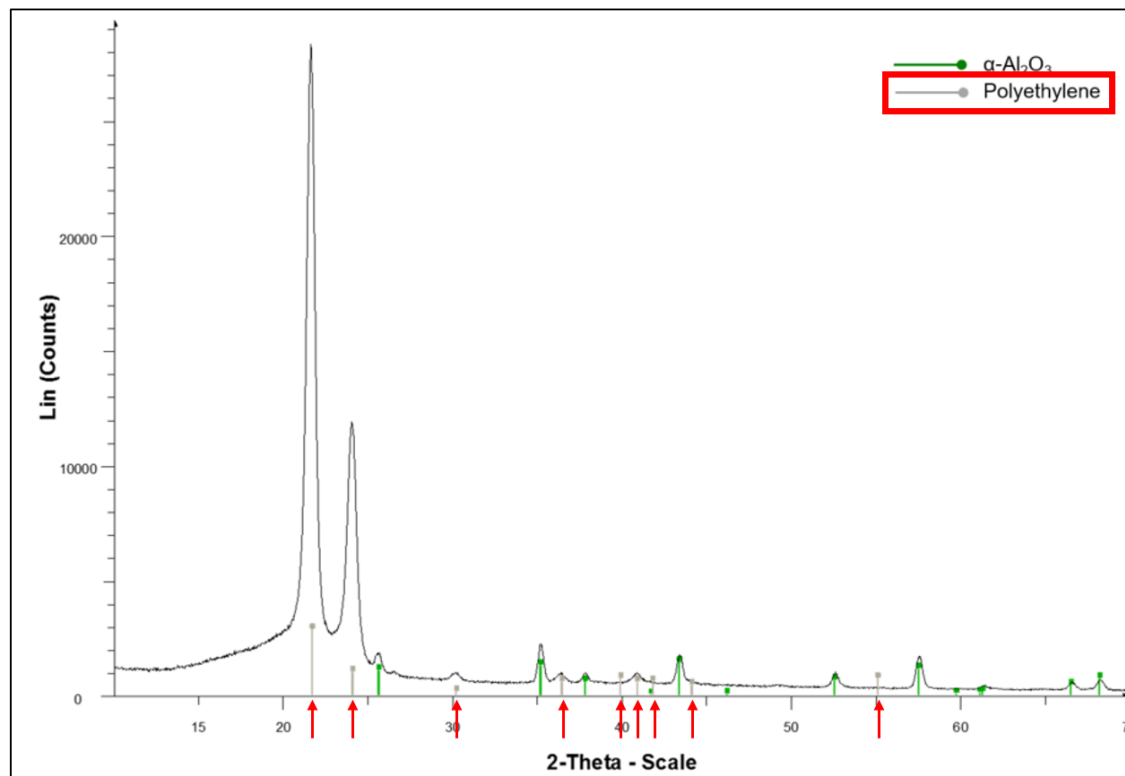


Plan-view SEM images at x10k and x25k, respectively.

Claim 1

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As demonstrated by XRD results shown below, the composite porous separator includes α -Al₂O₃ and polyethylene:



XRD analysis of composite porous separator.

In the XRD results above, *polyethylene* corresponds to material in the polyolefin porous substrate of the accused ATL Cell 844297. Polyethylene is a type of polyolefin.

[1b] (b) a porous active layer containing a mixture of inorganic particles and a

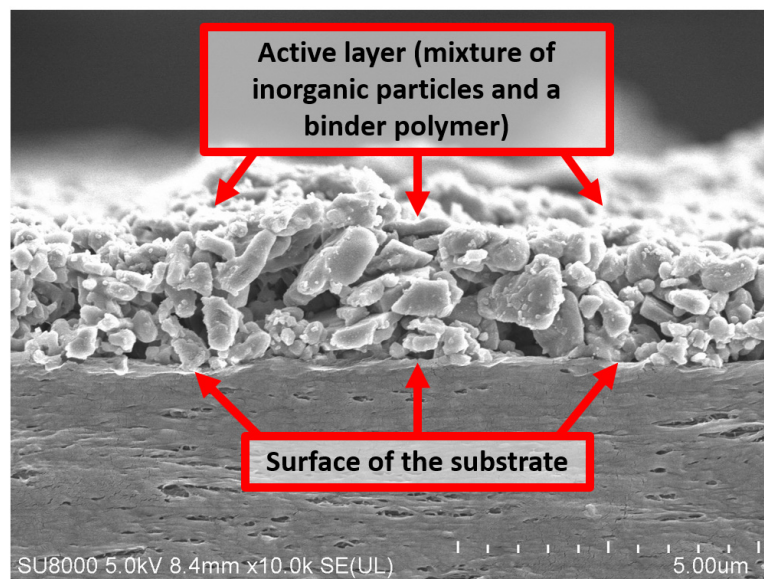
Each ATL Cell 844297 includes a porous active layer containing a mixture of inorganic particles and a binder polymer, with which at least one surface of the polyolefin porous substrate is coated.

Claim 1

binder polymer, with which at least one surface of the polyolefin porous substrate is coated,

Representative Accused ATL Cell 844297: ATL Cell 844297

For example, as shown in the SEM image below, the surface of the substrate (i.e., polyolefin porous substrate) is coated with an active layer that includes a mixture of inorganic particles and a binder polymer:

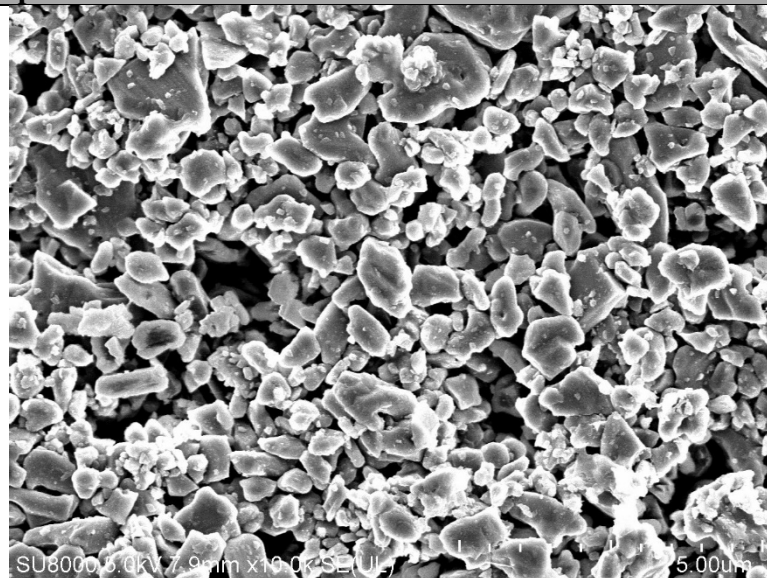


Cross-section SEM image at x10k.

The mixture of inorganic particles and binder polymer that makes up the porous active layer can be further seen in the SEM image below:

Claim 1

Representative Accused ATL Cell 844297: ATL Cell 844297

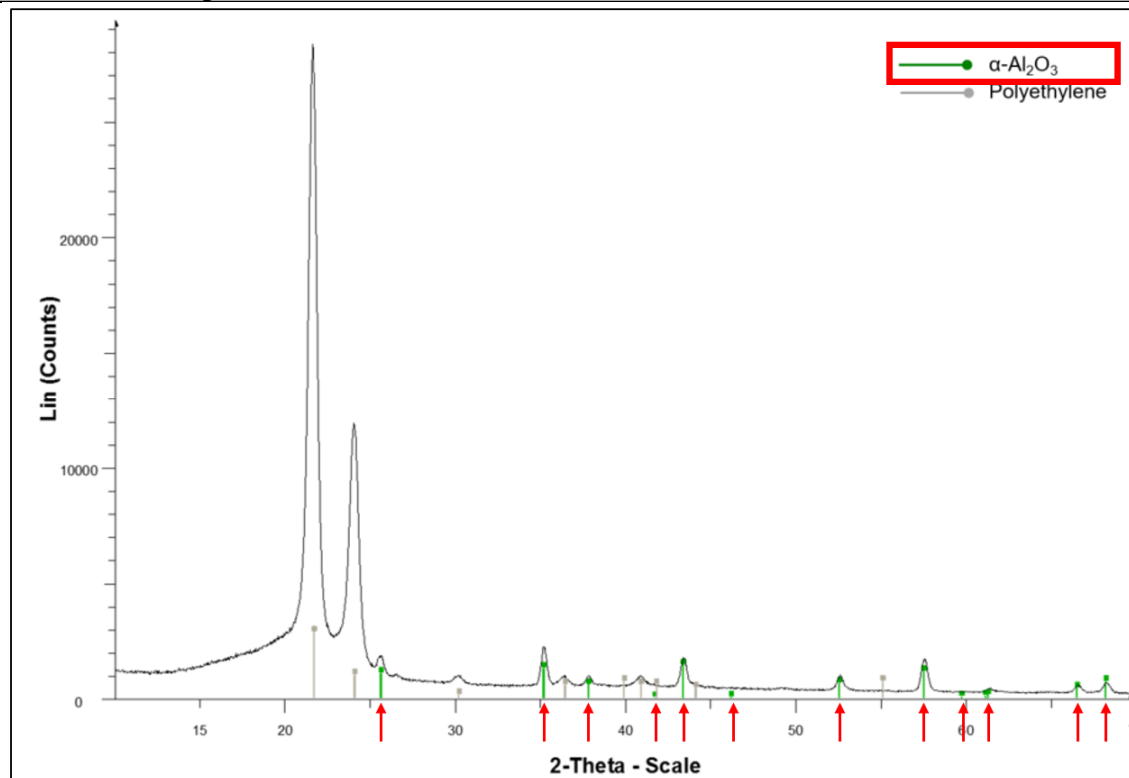


Plan-view SEM image at x10k.

As demonstrated by XRD results shown below, the porous active layer includes inorganic particles including at least $\alpha\text{-Al}_2\text{O}_3$ (aluminum oxide):

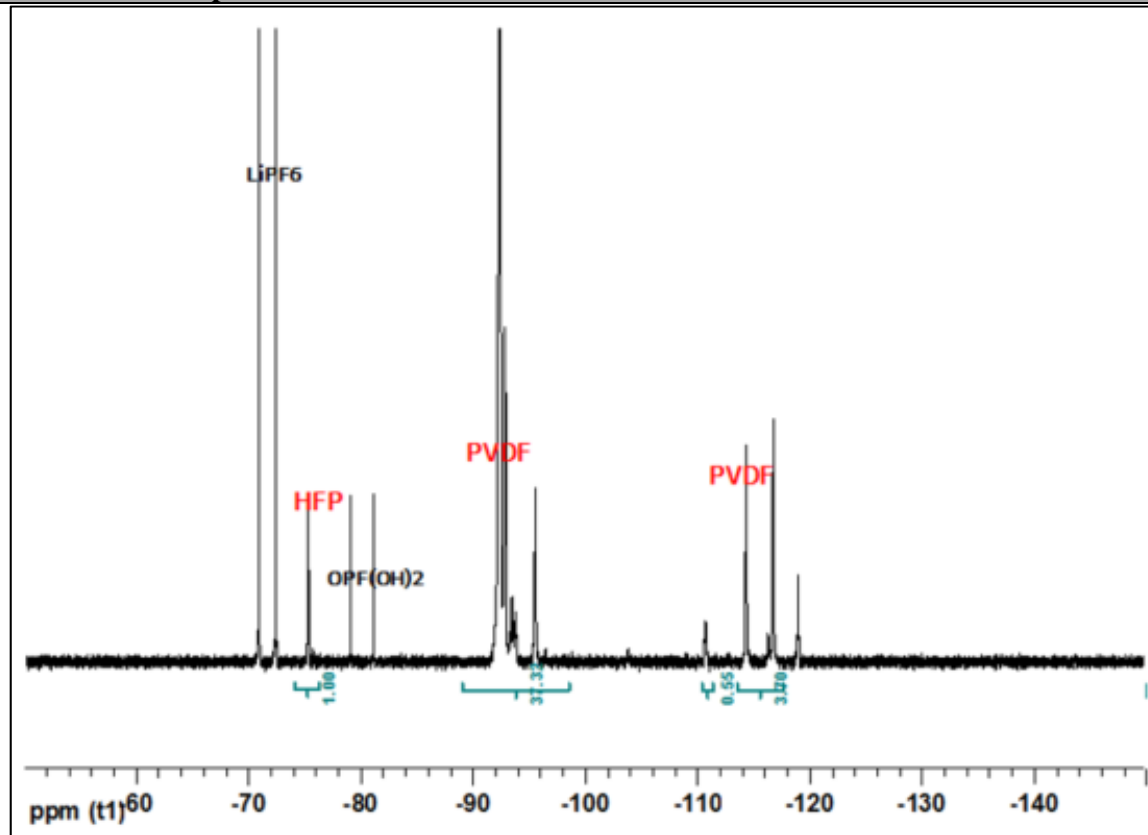
Claim 1

Representative Accused ATL Cell 844297: ATL Cell 844297



XRD analysis of composite porous separator.

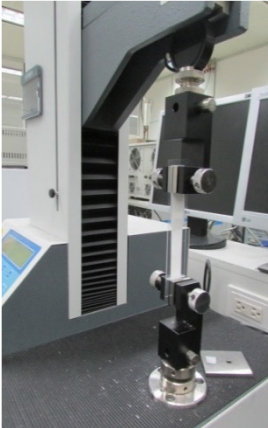

As shown below, F-NMR analysis of the binder material in the porous active layer shows components corresponding to at least PVDF-HFP (polyvinylidene fluoride-co-hexafluoropropylene):

Claim 1**Representative Accused ATL Cell 844297: ATL Cell 844297**

F-NMR analysis of binder material.

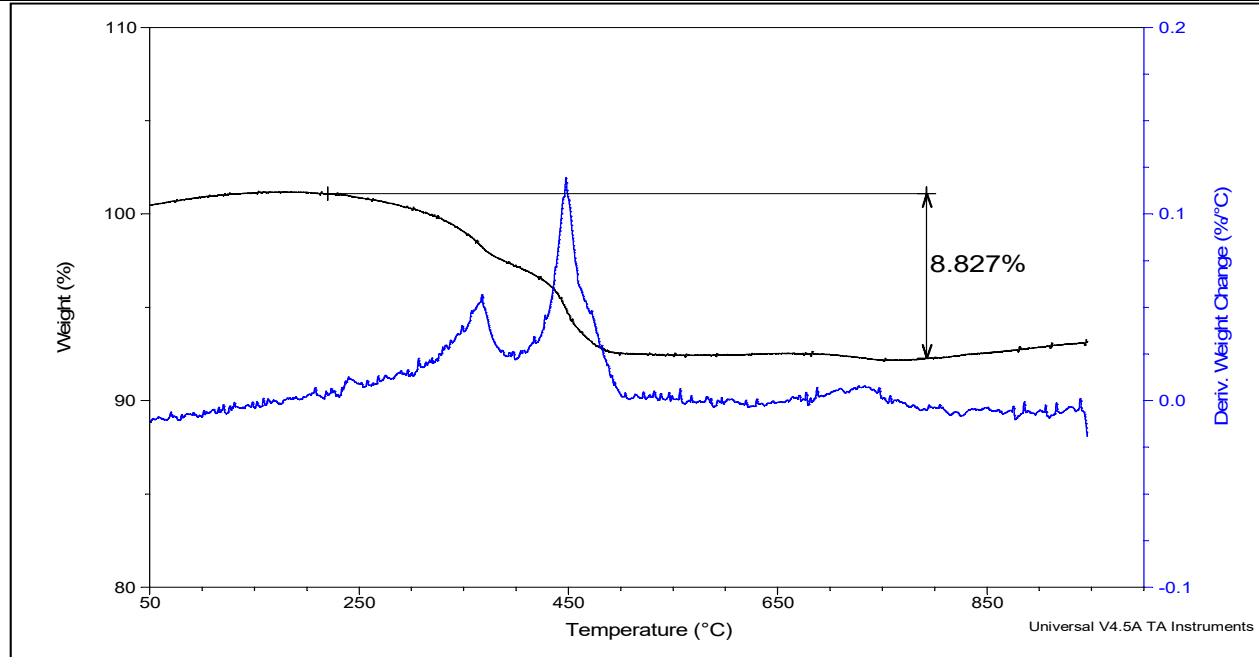
[1c] wherein the porous active layer has a peeling force of 5 gf/cm or above, and a thermal shrinkage of the separator after being left alone at 150° C for 1 hour is

Each ATL Cell 844297 includes a composite separator wherein the porous active layer has a peeling force of 5 gf/cm or above, and a thermal shrinkage of the separator after being left alone at 150° C for 1 hour is 50% or below in a machine direction (MD) or in a transverse direction (TD).

Claim 1	Representative Accused ATL Cell 844297: ATL Cell 844297																		
<p>50% or below in a machine direction (MD) or in a transverse direction (TD),</p>	<p>For example, as shown below, sample testing results performed on the composite separator indicate: i) peeling force above 5 gf/cm, ii) MD shrinkage below 50%, and iii) TD shrinkage below 50%.</p> <table border="1" data-bbox="932 339 1560 656"> <thead> <tr> <th colspan="3"></th> <th>Median Value</th> <th>Standard Deviation</th> </tr> </thead> <tbody> <tr> <td colspan="3">Peel (gf/10mm)</td> <td>13</td> <td>1.0</td> </tr> <tr> <td rowspan="2">Heat shrinkage (%)</td> <td rowspan="2">150°C 60min</td> <td>MD</td> <td>30</td> <td>3.8</td> </tr> <tr> <td>TD</td> <td>39</td> <td>6.4</td> </tr> </tbody> </table> <p>Testing was performed according to the '152 patent using the following equipment:</p> <div style="display: flex; justify-content: space-around;">   </div> <p>Testing equipment used to measure peeling force (left) and thermal shrinkage (right).</p>				Median Value	Standard Deviation	Peel (gf/10mm)			13	1.0	Heat shrinkage (%)	150°C 60min	MD	30	3.8	TD	39	6.4
			Median Value	Standard Deviation															
Peel (gf/10mm)			13	1.0															
Heat shrinkage (%)	150°C 60min	MD	30	3.8															
		TD	39	6.4															
<p>[1d] wherein the inorganic particles and the binder polymer are mixed in a weight ratio of 50:50 to 99:1.</p>	<p>Each ATL Cell 844297 includes a composite separator wherein the inorganic particles and the binder polymer are mixed in a weight ratio of 50:50 to 99:1.</p> <p>As shown in the sample TGA results below, the inorganic particles in the mixture of the inorganic particles and the binder polymer have a wt % of 92.1 ± 1.6:</p>																		

Claim 1

Representative Accused ATL Cell 844297: ATL Cell 844297



TGA analysis of mixture of inorganic particles and binder polymer.