What is Claimed is:

1.

A polyolefin multilayer microporous membrane having at least three layers, the membrane comprising a first microporous layer being both surface layers and a second microporous layer being an intermediate layer;

the first microporous layer being composed of a polyethylene resin containing at least 30 mass% and less than 70 mass% of an ultrahigh molecular weight polyethylene having a weight average molecular weight of at least 1×10^6;

the second microporous layer being composed of a polyolefin resin containing at least 50 mass% of a high-density polyethylene having a weight average molecular weight of at least 1×10^4 and less than 5×10^5 and a polypropylene;

a polypropylene content in the multilayer microporous membrane being at least 5 mass% and at most 15 mass% with respect to a total of 100 mass% of the polyethylene resin and the polyolefin resin contained in both surface layers and the intermediate layer; and

the polyolefin multilayer microporous membrane satisfying the following requirements (I) to (III)

(I) A pin puncture strength is at least 25 g/μm

(II) A coefficient of static friction in an MD direction and a TD direction of both surface layers with respect to an aluminum foil is respectively at least 0.40

(III) A meltdown temperature is at least 180°C.

2.

The polyolefin multilayer microporous membrane according to claim 1, wherein an average pore size is at least 0.001 μm and less than 0.030 μm.

3.

The polyolefin multilayer microporous membrane according to claim 1, wherein a film thickness is at least 1 μm and less than 20 μm, and an air permeability is at most 600 sec/100cc.

4.

The polyolefin multilayer microporous membrane according to any one of claims 1 to 3, wherein an area retention rate is at least 90% when the polyolefin multilayer

microporous membrane is disposed between positive and negative electrodes of a lithium ion secondary battery and exposed for one hour at 150°C.

5.

A battery separator comprising the polyolefin microporous membrane described in any one of claims 1 to 4.

Claims

1. A polyolefin multilayer microporous membrane having at least three layers, the membrane comprising a first microporous layer being both surface layers and a second microporous layer being an intermediate layer;
the first microporous layer being composed of a polyethylene resin containing at least 30 mass% and less than 70 mass% of an ultrahigh molecular weight polyethylene having a weight average molecular weight of at least 1×10^6;
the second microporous layer being composed of a polyolefin resin containing at least 50 mass% of a high-density polyethylene having a weight average molecular weight of at least 1×10^4 and less than 8×10^5 and a polypropylene;
a polypropylene content in the multilayer microporous membrane being at least 5 mass% and at most 15 mass% with respect to a total of 100 mass% of the polyethylene resin and the polyolefin resin contained in both surface layers and the intermediate layer; and
the polyolefin multilayer microporous membrane satisfying the following requirements (I) to (III)
(I) A pin puncture strength is at least 25 g/μm
(II) A coefficient of static friction in an MD direction and a TD direction of both surface layers with respect to an aluminum foil is respectively at least 0.40
(III) A meltdown temperature is at least 180°C.

2. The polyolefin multilayer microporous membrane according to claim 1, wherein an average pore size is at least 0.001 μm and less than 0.030 μm.

3. The polyolefin multilayer microporous membrane according to claim 1, wherein a film thickness is at least 1 μm and less than 20 μm, and an air permeability is at most 600 sec/100cc.

4. The polyolefin multilayer microporous membrane according to any one of claims 1 to 3, wherein an area retention rate is at least 90% when the polyolefin multilayer

microporous membrane is disposed between positive and negative electrodes of a lithium ion secondary battery and exposed for one hour at 150°C.

5. A battery separator comprising the polyolefin microporous membrane described in any one of claims 1 to 4.