CLAIMS

1. A support and drainage material comprising

a foldable element allowing fluid flow through, the element comprising:

at least one first section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a first section bulk between the first major surface and the second major surface, the first section bulk having a thickness extending from the first end to a portion of the second end; wherein the at least one first section further comprises at least one first section aperture extending a length of 25% to 75% a distance between the first end and the second end, and extending a length of 2% to 100% a distance between the first side and the second side; and/or

at least one second section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a second section bulk between the first major surface and the second major surface, the second section bulk having a thickness extending from the first end to a portion of the second end; wherein the at least one second section further comprises at least one second section aperture extending a length of 25% to 75% a distance between the first end and the second end, and extending a length of 2% to 100% a distance between the first side and the second side;

wherein, when the foldable element is folded, a part of the first section bulk thickness fits in the at least one aperture of the at least one second section, and/or a part of the second section bulk thickness fits in the at least one aperture of the at least one first section.

2. The support and drainage material of claim 1, further comprising an additional first section and an additional second section, wherein the additional first section is connected to the second section, and the additional second section is connected to the additional first section;

wherein, when the foldable element is folded, a part of the additional first section bulk thickness fits in the at least one aperture of the additional second section, and a part of the additional second section bulk thickness fits in the at least one aperture of the additional first section.

3. The support and drainage material of claim 1 or 2, wherein folded element provides tapered flow channels each having at least two steps.

4. The support and drainage material of claim 1, wherein the at least one first section has two or more first section apertures, each extending a length of 25% to 75% a distance between the first end and the second end; and

the at least one second section has two or more single second section apertures, each extending a length of 25% to 75% a distance between the first end and the second end.

5. A support and drainage material system comprising

a first support and drainage material allowing fluid flow through and a second separate support and drainage material allowing fluid flow through;

(a) the first support and drainage material comprising a first foldable element allowing fluid flow through, the first foldable element comprising:

at least one first section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a first section bulk between the first major surface and the second major surface, the first section bulk having a thickness extending from the first end to a portion of the second end; wherein the at least one first section further comprises at least one first section aperture extending a length of 25% to 75% a distance between the first end and the second end, and extending a length of 2% to 100% a distance between the first side and the second side; and/or

at least one second section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a second section bulk between the first major surface and the second major surface, the second section bulk having a

thickness extending from the first end to a portion of the second end; wherein the at least one second section further comprises at least one second section aperture extending a length of 25% to 75% a distance between the first end and the second end, and extending a length of 2% to 100% a distance between the first side and the second side;

wherein, when the first foldable element is folded, a part of the first section bulk thickness fits in the at least one aperture of the at least one second section, and/or a part of the second section bulk thickness fits in the at least one aperture of the at least one first section; and,

(b) the second support and drainage material comprising a second foldable element allowing fluid flow through, the second foldable element comprising:

at least one first section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a first section bulk between the first major surface and the second major surface, the first section bulk having a thickness extending from the first end to a portion of the second end; wherein the at least one first section further comprises at least one first section aperture extending a length of 25% to 75% a distance between the first end and the second end, and extending a length of 2% to 100% a distance between the first side and the second side; and/or

at least one second section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a second section bulk between the first major surface and the second major surface, the second section bulk having a thickness extending from the first end to a portion of the second end; wherein the at least one second section further comprises at least one second section aperture extending a length of 25% to 75% a distance between the first end and the second end, and extending a length of 2% to 100% a distance between the first side and the second side;

wherein, when the second foldable element is folded, a part of the first section bulk thickness fits in the at least one aperture of the at least one second section, and/or a

part of the second section bulk thickness fits in the at least one aperture of the at least one first section.

6. A support and drainage material comprising

a foldable element allowing fluid flow through, the element comprising:

(A) a first foldable layer comprising:

(i) at least one first section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a first section bulk between the first major surface and the second major surface, the first section bulk having a thickness extending from the first end toward the second end without reaching the second end; wherein the at least one first section further comprises at least one first section aperture extending a length of 15% to 35% a distance between the first end and the second end, and extending a length of 2% to 100% a distance between the first side and the second side;

and,

(ii) at least one second section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a second section bulk between the first major surface and the second major surface, the second section bulk having a thickness extending from the second end toward the first end without reaching the first end; wherein the at least one second section further comprises at least one second section aperture extending a length of 40% to 60% a distance between the second end and the first end, and extending a length of 2% to 100% a distance between the first side and the second side;

and,

(B) a second foldable layer comprising:

(iii) at least one first section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a first section bulk between the first major surface and the second major surface, the first section bulk having a thickness extending from the second end to the first end;

and,

(iv) at least one second section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a second section bulk between the first major surface and the second major surface; the second section bulk having a thickness extending from the second end toward the first end without reaching the first end; wherein the at least one second section further comprises at least one second section aperture extending a length of 65% to 85% a distance between the first end and the second end, and extending a length of 2% to 100% a distance between the first side and the second side;

wherein the first foldable layer (A) is placed on top of the second foldable layer (B); and

wherein, when the foldable element is folded, a part of the first section bulk thickness and/or a part of the second bulk thickness of the first foldable layer (A) fits in some of the at least one apertures of the at least one second section of the second foldable layer (B);

and/or

a part of the first section bulk thickness of the second foldable layer (B) fits in some of the at least one apertures of the at least one first section and/or the at least one apertures of the at least one second section of the first foldable layer (A).

7. The support and drainage material of claim 6, wherein the second end of the at least one first section of the first foldable layer (A) is connected to the first end of the at least one second section and/or wherein the second end of the at least one first section of the second foldable layer (B) is connected to the first end of the at least one second section.

8. A support and drainage material system comprising

a first support and drainage material allowing fluid flow through and a second separate support and drainage material allowing fluid flow through;

(a) the first support and drainage material comprising a first foldable element allowing fluid flow through, the first foldable element comprising:

(A) a first foldable layer comprising:

(i) at least one first section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a first section bulk between the first major surface and the second major surface, the first section bulk having a thickness extending from the first end toward the second end without reaching the second end; wherein the at least one first section further comprises at least one first section aperture extending a length of 15% to 35% a distance between the first end and the second end, and extending a length of 2% to 100% a distance between the first side and the second side;

and,

(ii) at least one second section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a second section bulk between the first major surface and the second major surface, the second section bulk having a thickness extending from the second end toward the first end without reaching the first end; wherein the at least one second section further comprises at least one second section aperture extending a length of 40% to 60% a distance between the second end and the first end, and extending a length of 2% to 100% a distance between the first side and the second side;

and,

(B) a second foldable layer comprising:

(iii) at least one first section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a first section bulk between the first major surface and the second major surface, the first section bulk having a thickness extending from the second end to the first end;

and,

(iv) at least one second section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a second section bulk between the first

major surface and the second major surface; the second section bulk having a thickness extending from the second end toward the first end without reaching the first end; wherein the at least one second section further comprises at least one second section aperture extending a length of 65% to 85% a distance between the first end and the second end, and extending a length of 2% to 100% a distance between the first side and the second side;

wherein the first foldable layer (A) is placed on top of the second foldable layer (B); and

wherein, when the foldable element is folded, a part of the first section bulk thickness and/or a part of the second bulk thickness of the first foldable layer (A) fits in some of the at least one apertures of the at least one second section of the second foldable layer (B);

and/or

a part of the first section bulk thickness of the second foldable layer (B) fits in some of the at least one apertures of the at least one first section and/or the at least one apertures of the at least one second section of the first foldable layer (A); and,

(b) the second support and drainage material comprising a second foldable element allowing fluid flow through, the second foldable element comprising:

(C) a first foldable layer comprising:

(i) at least one first section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a first section bulk between the first major surface and the second major surface, the first section bulk having a thickness extending from the first end toward the second end without reaching the second end; wherein the at least one first section further comprises at least one first section aperture extending a length of 15% to 35% a distance between the first end and the second end, and extending a length of 2% to 100% a distance between the first side and the second side;

and,

(ii) at least one second section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a second section bulk between the first major surface and the second major surface, the second section bulk having a thickness extending from the second end toward the first end without reaching the first end; wherein the at least one second section further comprises at least one second section aperture extending a length of 40% to 60% a distance between the second end and the first end, and extending a length of 2% to 100% a distance between the first side and the second side;

and,

(D) a second foldable layer comprising:

(iii) at least one first section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a first section bulk between the first major surface and the second major surface, the first section bulk having a thickness extending from the second end to the first end;

and,

(iv) at least one second section comprising a mesh or a non-woven fabric having a first end and a second end, a first side and a second side, a first major surface and a second major surface, and a second section bulk between the first major surface and the second major surface; the second section bulk having a thickness extending from the second end toward the first end without reaching the first end; wherein the at least one second section further comprises at least one second section aperture extending a length of 65% to 85% a distance between the first end and the second end, and extending a length of 2% to 100% a distance between the first side and the second side;

wherein the first foldable layer (C) is placed on top of the second foldable layer (D); and

wherein, when the foldable element is folded, a part of the first section bulk thickness and/or a part of the second bulk thickness of the first foldable layer

(C) fits in some of the at least one apertures of the at least one second section of the second foldable layer (D);

and/or

a part of the first section bulk thickness of the second foldable layer (D) fits in some of the at least one apertures of the at least one first section and/or the at least one apertures of the at least one second section of the first foldable layer (C).

9. A filter arrangement comprising:

a pleated porous filter having a plurality of pleats, and having an upstream surface and a downstream surface, the upstream surface having a first upstream end and a second upstream end, and the downstream surface having a first downstream end and a second downstream end; and

the support and drainage material of any one of claims 1-4, 6, and 7, arranged to contact the upstream surface of the pleated porous filter, or to contact the downstream surface of the pleated porous filter.

10. A filter system comprising:

a pleated porous filter having a plurality of pleats, and having an upstream surface and a downstream surface, the upstream surface having a first upstream end and a second upstream end, and the downstream surface having a first downstream end and a second downstream end; and

the support and drainage material system of claim 5 or 8, wherein the pleated porous filter is arranged between the first support and drainage material and the second support and drainage material.

11. The filter system of claim 10, wherein the pleated porous filter comprises a laid-over-pleat filter.

12. The filter system of claim 10 or 11, further comprising an inner core and an outer cage.

13. A method of filtering fluid, the method comprising passing a fluid through the filter system of any one of claims 10-12, including passing fluid through the first support and drainage material, the upstream surface of the pleated porous filter, the downstream surface of the pleated porous filter, and the second support and drainage material.