Claims

1. A hollow fiber filter comprising:

a housing; and

a hollow fiber filter element disposed within the housing, the hollow fiber filter element comprising:

a first end, a second end, an exterior circumferential porous wall extending between the first and second ends, a lumen running therethrough, the lumen open to the first and second ends, a central longitudinal axis extending between the first and second ends, and a length as measured between the first and second ends along the central longitudinal axis, the hollow fiber filter element characterized by a throughput volume defined as a measurement of a flow of particles passing through the exterior circumferential porous wall;

a watertight seal disposed about an exterior surface of each of the first and second ends between the exterior surface of each of the first and second ends and the housing; and

a non-permeable covering selected from one or more of a dip coat, a spray coat, and a shrink wrap, the non-permeable covering disposed about a first portion of the porous wall of the hollow fiber filter element, the non-permeable covering extending from the watertight seal of the first end toward the second end along a length of the central longitudinal axis,

wherein the non-permeable covering extends circumferentially about the exterior circumferential porous wall of the hollow fiber filter element, and

wherein a second portion of the exterior circumferential porous wall of the hollow fiber filter element is not covered by the non-permeable covering, and

wherein application of the non-permeable covering reduces the throughput volume of the hollow fiber filter element by reducing an effective overall length of the hollow fiber filter element.

2. The hollow fiber filter of claim 1, wherein a third portion of the porous wall is covered by the non-permeable covering, the third portion positioned between the second portion of the porous wall and the watertight seal of the second end of the hollow fiber filter element.

3. The hollow fiber filter of claim 2, wherein the covering comprises polyurethane.

4. The hollow fiber filter of claim 3, wherein the water tight seal comprises polyurethane.