CLAIMS

1. A method for testing the integrity of a porous filter medium having an upstream side and a downstream side, said porous filter medium being incorporated into a housing, said housing comprising an interior separated by the porous filter medium into an upstream portion at the upstream side of the filter medium and a downstream portion at the downstream side of the filter medium, said housing further comprising an inlet in fluid connection with the upstream portion and an outlet in fluid connection with the downstream portion of the interior, said outlet being connected to a filtrate conduit comprising a closable end remote from said outlet, and said porous filter medium having a predefined bubble point;
said method comprising:

- providing the porous filter medium in a state wherein the pores of the filter medium are wetted and filled with a liquid;
- providing the downstream portion of the interior of the housing and the filtrate conduit filled with a liquid so as to displace gas in the downstream portion of the interior and the filtrate conduit;
- closing the remote closable end of the filtrate conduit;
- draining the upstream portion of the interior and filling same with a testing gas at least to such an extent that essentially the whole upstream side of the porous filter medium is exposed to the testing gas while retaining the liquid in the downstream portion of the interior;
- providing a gas-filled testing volume fluidly connected to the downstream portion of the interior via said filtrate conduit filled with liquid;
- providing a means for measuring the pressure in the downstream portion of the interior;
- creating a pressure of the testing gas in the upstream portion of the interior corresponding to a predetermined testing differential pressure and maintaining it at this pressure level, said predetermined testing differential pressure being lower than the predefined bubble point of the porous filter medium;
- determining the pressure of the gas within the testing volume by the means for measuring the pressure after a predetermined time after the predetermined testing differential pressure has been established, said testing volume being selected such that, when a filter medium is tested having a bubble point corresponding to the predefined bubble point, a pressure increase of the gas within the testing volume of about 100 mbar or more is obtained within a period of 10 minutes; and
- comparing said determined pressure of the gas within the testing volume to a pressure obtained within the predetermined time when testing a non-defective filter medium, wherein in case said determined pressure of the gas within the testing volume is higher by a predefined

amount than a pressure obtained when testing a non-defective filter medium, said tested filter medium is qualified as defective.

2. The method of claim 1, wherein the testing volume is limited to a volume such that, when a filter medium is tested having a predefined bubble point, a pressure increase of the gas within the testing volume is obtained of about 0.1 to about 0.8 times, preferably of about 0.2 to about 0.6 times, of the predetermined pressure differential within a period of 10 minutes.

3. The method of claim 1 or 2, wherein testing gas is selected from the group consisting of inert gases, especially nitrogen, and air.

4. The method of any one of claims 1 to 3, wherein the porous filter medium is provided in the form of one or more filter elements, preferably in the form of a porous membrane filter medium, said porous membrane filter medium being a pleated membrane filter medium or a hollow fiber membrane filter medium.

5. The method of any one of claims 1 to 4, wherein the filtration system comprises one or more additional housings, each having an interior and incorporating a porous filter medium, each interior being separated by the respective porous filter medium into an upstream portion at an upstream side of the filter medium and a downstream portion at a downstream side of the filter medium; each housing having an outlet at its downstream portion and optionally a valve connected to the outlet of the downstream portion.

6. The method of any one of claims 1 to 5, wherein the housing or the housings form a part of an industrial filtration system, in particular for filtering liquids in the fields of food and beverage, chemistry, pharmaceuticals and biotechnology.

7. An assembly for testing the integrity of a porous filter medium, said assembly comprising

- one or more housings, each of said housing or housings comprising an interior separated into an upstream portion and a downstream portion; said housing or housings further comprising an inlet in fluid connection with the upstream portion and an outlet in fluid connection with the downstream portion of the interior;
- a porous filter medium separating the interior of a housing into said upstream portion at an upstream side of the porous filter medium and said downstream portion at a downstream side of the porous filter medium, said filter medium being provided in the form of one or more filter elements, said porous filter medium having a predefined bubble point;

- a gas-filled testing volume fluidly connectable to the downstream portion of the housing or the downstream portions of the housings;
- a means for measuring the pressure of the gas within the testing volume;
- a filtrate conduit providing a flow path extending from the outlet of the interior of the housing or the outlets of the interiors of the housings to the testing volume, said filtrate conduit comprising a closable end remote from the outlet or outlets; and
- a pressure source suitable for increasing the pressure of the testing gas in the upstream portion of the housing or housings up to a predetermined testing differential pressure and maintaining it at such pressure level for a predetermined time, said testing differential pressure being lower than the predefined bubble point of the porous filter medium,

wherein said pressure of the gas determined within the testing volume is to be compared to a pressure obtained within the predetermined time when testing a non-defective filter medium, wherein in case said pressure of the gas determined within the testing volume is higher by a predetermined amount than said pressure obtained when testing a non-defective filter medium, said tested filter medium qualifies as defective.

8. The assembly of claim 7, wherein the assembly forms a part of an industrial filtration system, in particular for filtering liquids in the fields of food and beverage, chemistry, pharmaceutical and biotechnology.

9. The assembly of claim 7 or 8, wherein the filtering apparatus comprises two or more housings incorporating a porous filter medium, each housing having a valve connected to the outlet of the downstream portion.

10. The assembly of any one of claims 7 to 9, wherein the filter element is or the filter elements are in the form of a filter candle, and/or the porous filter medium is a pleated filter medium and/or a membrane filter medium, in particular a hollow fiber membrane filter medium.

11. The assembly of any one of claims 7 to 10, wherein said housing/assembly comprises an inlet valve for fluidly connecting the upstream portion of the housing or the upstream portions of the housings with a source of pressurized testing gas.

12. The assembly of any one of claims 7 to 11, wherein the assembly comprises a valve for fluidly connecting and disconnecting the testing volume to the downstream portion of the housing or the downstream portions of the housings.

13. The assembly of any one of claims 7 to 12, wherein the testing volume comprises an outlet for fluidly connecting the testing volume to the environment.

14. The assembly of any one of claims 7 to 13, wherein each housing is provided with a separate inlet and a valve for providing testing gas to the upstream portion of the interior of the housing or the housings.

15. The assembly of any one of claims 7 to 14, wherein the testing volume is provided in a portion of said filtrate conduit, said filtrate conduit portion being delimited by an upstream valve and a downstream valve defining in between the testing volume and optionally comprising an outlet.