Claims

1. Air filter for an air treatment system, the air filter (1) comprising at least one foam filter element (2) and at least one insulation element (7) for preventing a discharge of the electrostatic charge, wherein the insulation element (7) is affixed to the foam filter element (2), wherein the insulation element (7) surrounds the foam filter element (2), wherein the at least one insulation element (7) covers side surfaces (5) of the foam filter element fully, wherein a front surface (3) and a rear surface (4) of the foam filter are not covered by the at least one insulation element (7), wherein the insulation element (7) is glued to the foam filter element (2),
characterized in that
the foam filter material is or comprises a material with inherent electrostatic triboelectric charging characteristics.

2. The air filter according to claim 1, characterized in that the electric field intensity generated by the air filter (1) is dependent on the speed of the air flow passing through the air filter (1), a cell density of the air filter (1) material and a thickness of the air filter (1).

3. The air filter according to claim 1 or 2, characterized in that the foam filter element (2) comprises multiple layers (2a, 2b) with different cell densities.

4. The air filter according to claim 3, characterized in that a first layer (2a) has a cell density in the range of 10 ppi (inclusive) to 30 ppi (inclusive), wherein a further layer (2b) has a cell density equal to or higher than 30 ppi and/or that for at least one set of two adjacent layers (2a, 2b), a layer (2b) with the higher cell density is arranged after a layer (2b) with the lower cell density along an air flow direction (6) through the air filter (1).

5. The air filter according to claim 3 or 4, characterized in that a thickness (D_2b) of a layer (2b) with a higher cell density is smaller than a thickness (D_2a) of a layer (2a) with a lower cell density.

6. The air filter according to claim 1, characterized in that the insulation element (7) is affixed to a filter holder of the air treatment system.

7. The air filter according to one of the claims 1 to 6, characterized in that the material of the at least one insulation element (7) is polyethylene or a ceramic material or a polyester material.

8. The air filter according to one of the preceding claims, characterized in that the air filter (1) comprises at least one charging-improving element (11) or at least one charging improving coating (10).

9. The air filter of claim 8, characterized in that the material of the at least charging improving element (11) or the at least one charging improving coating (10) is an antiviral material.

10. The air filter according to one of the preceding claims, characterized that the air filter (1) comprises at least one absorbing element or at least one absorbing coating (12).

11. The air filter according to claim 10, characterized that the material of the at least absorbing element or the at least one absorbing coating (12) is an organo-phosphorous compound or an inorganic compound.

12. The air filter according to claim 10 or 11, characterized in that a material of the at least one charging-improving element (11) or the charging improving coating (10) is zeolite or a volcanic rock material.

13. A method for manufacturing an air filter (1) for an air treatment system according to one of the preceding claims, the method comprising providing at least one foam filter element (2), wherein the foam filter material is or comprises a material with inherent electrostatic triboelectric charging characteristics.

14. The method according to claim 13, characterized in that the method includes defining a cell density of the air filter (1) material or of a layer (2a, 2b) material and a thickness of the air filter (1) or of a layer (2a, 2b).