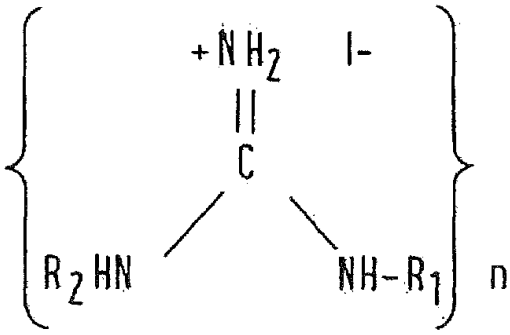
Patent claims

1. An apparatus (1) for germ reduction of a fluid (2) comprising:
- a housing (10)
- an inlet (12)
- an outlet (14)
- a fluid-contacting surface (20) comprising a biocide (22) embodied to reduce the germ count of the fluid (2),
characterized in that the fluid-contacting surface (20) is a fluid-contacting surface (20) of a static mixing element (30), wherein the fluid-contacting surface (20) comprises a polymeric guanidine according to the general formula



in which R1 and R2 are independently of each other H, [-C(=NH)-NHR3], or an aliphatic, cycloaliphatic, araliphatic or aryl organic group, or an acyl group comprising such an organic group; R3 is H or an aliphatic, cycloaliphatic, araliphatic or aryl organic group, or an acyl group comprising such an organic group; I- is anion and n is ≥ 2, or a polymer selected from polymer compounds including polyethylene and/or propylene and/or polyamide and/or PVDF and/or polyurethane and/or polycarbamides with polymeric guanidines or a polymer compound

selected from polyamide, polyethylene, fluoropolymer or polyurethane compounded with guanidine or a derivative thereof.

2. The apparatus (1) of claim 1, wherein the static mixer element (30) contains biocide (22) only in a surface region (21) encompassing the fluid-contacting surface (20).

3. A process reducing the germ count of a fluid containing germs (2') using the apparatus (1) of any one of claims 1 to 2 comprising the steps of:
- feeding the fluid containing germs (2') to the apparatus (1) via the inlet (12),
- treating the fluid containing germs (2') on a fluid-contacting surface comprising a biocide (22) in order to form a fluid having a reduced germ count (2"),
- removing the fluid having a reduced germ count (2") from the apparatus (1) via the outlet (14).

4. The process of claim 3, wherein the residence time in the apparatus (1) is less than 600, preferably 180, more preferably 60, even more preferably 10, still more preferably 5, and most preferably 1 s.

5. The process of either of claim 3 or 4, wherein the temperature of the fluid (2') in the apparatus (1) is between 0 and 200, preferably 10 to 100, more preferably 10 to 60, most preferably 20 to 30 °C.

6. The process of any one of claims 3 to 5, wherein the pressure of the fluid (2") in the process is less than or equal to 100, preferably 20, more preferably 16, even more preferably 10, most preferably 6 bar.

7. The process of any one of claims 3 to 6, wherein the ratio of the active surface to the volume of the apparatus (1) is more than 50, preferably 150, more preferably 300, most preferably 600 m^2/m^3.

8. The process of any one of claims 3 to 7, wherein the viscosity of the fluid (2') in the process is less than 1000, preferably 10, more preferably 0.1 Pa s.

9. The process of any one of claims 3 to 8, wherein the pressure loss of the fluid (2') is less than 1, preferably 0.3, most preferably 0.1 bar.

10. Use of the apparatus (1) of any one of claims 1 to 2 in the germ reduction of fuel oil, of food products, or water decontamination, preferably decontamination of waste water, industrial process water, or the treatment of drinking water.