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- (71) Applicant (for all designated States except US): **THE PROCTER & GAMBLE COMPANY** [US/US]; One Procter & Gamble Plaza, Cincinnati, Ohio 45202 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **NWACHUKWU, Chisomaga, Ugochi** [US/US]; 322 West 4th Street, Cincinnati, Ohio 45202 (US). **SHERRY, Alan, Edward** [US/US]; 90 Watch Hill Lane, Newport, Kentucky 41071 (US).
- (74) Common Representative: **THE PROCTER & GAMBLE COMPANY**; c/o Eileen L. Hughett, Global Patent Services, 299 East Sixth Street, Sycamore Building, 4th Floor, Cincinnati, OH 45202 (US).
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(54) Title: METHODS FOR REDUCING PARTICULATES IN THE AIR

(57) Abstract: Methods for reducing particulates in the air are disclosed. In some embodiments, the method comprises spraying a composition having an effective amount of a zwitterionic polymer, a compressed gas propellant, and an aqueous carrier in to the air. The composition agglomerates particulates upon contacting particulates in the air thereby reducing particulates in the air.

AMENDED CLAIMS  
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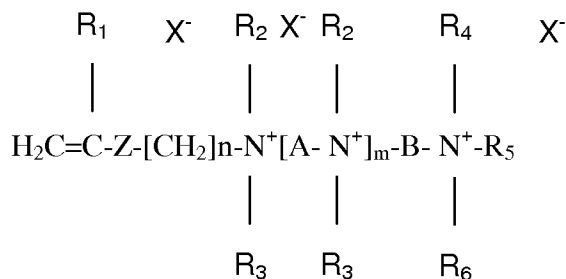
CLAIMS

What is claimed is:

1. A method for reducing particulates in the air comprising spraying a composition into the air, wherein said composition comprises:

I) an effective amount of a zwitterionic polymer, said zwitterionic polymer comprises:

a) at least a monomer compound of general formula I:



in which

$R_1$  is a hydrogen atom, a methyl or ethyl group;

$R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$  and  $R_6$ , which are identical or different, are linear or branched  $C_1$ - $C_6$ , alkyl, hydroxyalkyl or aminoalkyl groups;

$m$  is an integer from 0 to 10;

$n$  is an integer from 1 to 6;

$Z$  represents a  $--C(O)O--$  or  $--C(O)NH--$  group or an oxygen atom;

$A$  represents a  $(CH_2)_p$  group,  $p$  being an integer from 1 to 6;

$B$  represents a linear or branched  $C_2$ - $C_{12}$ , polymethylene chain optionally interrupted by one or more heteroatoms or heterogroups, and optionally substituted by one or more hydroxyl or amino groups;

$X$ , which are identical or different, represent counterions; and

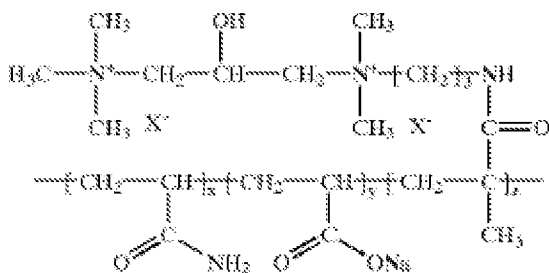
b) at least one hydrophilic monomer carrying a functional acidic group which is copolymerizable with (a) and which is capable of being ionized in the application medium;

c) optionally, at least one monomer compound with ethylenic unsaturation with a neutral charge which is copolymerizable with (a) and (b).

- II) a propellant comprising a compressed gas selected from the group consisting of: compressed air, nitrogen, nitrous oxide, inert gases, carbon dioxide, and mixtures thereof; and
- III) an aqueous carrier;

wherein said polymer agglomerates particulates in the air when said composition contacts particulates in the air.

2. The method of Claim 1 wherein said monomer (a) is such that  
Z represents -C(O)O-, -C(O)NH- or O atom;  
n is equal to 2 or 3;  
m ranges from 0 to 2;  
B represents -CH<sub>2</sub>-CH(OH)-(CH<sub>2</sub>)<sub>q</sub>, with q from 1 to 4; and  
R<sub>1</sub> to R<sub>6</sub>, which are identical or different, represent a methyl or ethyl group.
3. The method of Claim 1 wherein said polymer comprises said monomer (c), preferably said monomer (c) is a hydrophilic monomer compound with ethylenic unsaturation with a neutral charge, carrying one or more hydrophilic groups, which is copolymerizable with said monomers (a) and (b).
4. The method of Claim 1 wherein said monomer (b) is a C<sub>3</sub> -C<sub>8</sub> carboxylic, sulfonic, sulfuric, phosphonic or phosphoric acids with monoethylenic unsaturation.
5. The method of Claim 1 wherein said polymer comprises 3 to 80 mol % of said monomer (a); of 10 to 95 mol % of said monomer (b); and 0 to 50 mol % of said monomer (c).
6. The method of Claim 1 wherein said monomers (a) and (b) have a molar ratio by weight of the total of said monomers (a) and (b) between 80/20 and 5/95.
7. The method of Claim 1 wherein said polymer is:



with x having a mean value of 0 to 50 mol%, y having a mean value of 10 to 95 mol%, z having a mean value of 3 to 80 mol%, x, y and z representing the mol% of units derived from acrylamide, acrylic acid (sodium salt) and from Diquat respectively.

8. The method of Claim 1 wherein said zwitterionic polymer is present in an amount from 0.001% to 0.2%, by weight of said composition, preferably is present in an amount of from 0.01% to 0.05%, by weight of said composition.
9. The method of Claim 1 wherein said composition further comprises a buffer.
10. The method of Claim 1 wherein said composition further comprises a surfactant selected from the group consisting of: nonionic surfactants, zwitterionic surfactants, amphoteric surfactants, and mixtures thereof.
11. The method of Claim 1 wherein said composition further comprises a perfume ingredient.
12. The method of Claim 1, wherein said composition is provided in a plastic container.
13. The method of Claim 1 wherein said composition comprises a viscosity of 0.1 to 6 cps.
14. The method of Claim 1 wherein said composition comprises a pH of 3 to 7.

15. The method of Claim 1 further comprising a malodor counteractant, preferably a malodor counteractant comprising at least one of the following: cyclodextrin, carboxylic acids including mono, di, tri, and polyacrylic acids, and mixtures thereof.