- from 0.005% by weight to 1% by weight, preferably from 0.008% by weight to 0.8% by weight, with respect to the total weight of the dry elastomeric polymer, of at least one lamellar material;
- from 0.0005 by weight to 1% by weight, preferably from 0.0008% by weight to 0.8% by weight, with respect to the total weight of the dry elastomeric polymer, of at least one cationic surfactant.

For the purposes of the present description and of the following claims, the definitions of the numerical ranges always include the extremes, unless otherwise specified.

According to a preferred embodiment of the present invention, said elastomeric polymer can be selected from: polybutadiene (BR); polyisoprene (IR); unsaturated styrene copolymers with a random, block, tapered distribution, linear or branched such as, for example, styrene-butadiene (SB) copolymers, styrene-butadiene-styrene (SBS) copolymers, styrene-isoprene-styrene (SIS) copolymers; saturated styrene copolymers, with a random, block, tapered distribution, linear or branched such as styrene-ethylene-propylene (SEP) copolymers, styrene-ethylene/butylene-styrene (SEBS) copolymers, styrene-ethylene-propylene-styrene (SEPS) copolymers; or mixtures thereof. Styrene-butadiene (SB) copolymers and styrene-butadiene-styrene (SBS) copolymers, are preferred.

According to a preferred embodiment of the present invention, said polymeric solution comprises at least one non-polar organic solvent which can be selected, for example, from: butane, pentane, cyclopentane, hexane, benzene, toluene, cyclohexane, methylcyclohexane, chlorobenzene, or mixtures thereof. Hexane, cyclohexane, or mixtures thereof, are preferred.

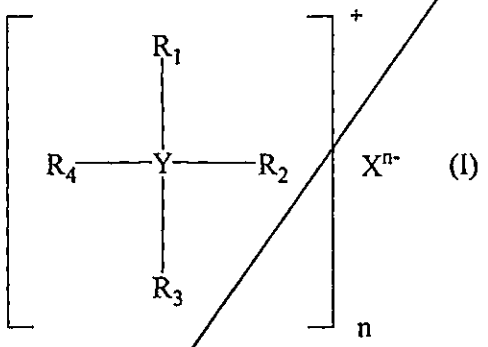
According to a preferred embodiment of the present invention, said elastomeric polymer is present in said polymeric solution in a quantity ranging from 2% by weight to 30% by weight, more preferably ranging from 5% by weight to 20% by weight, with respect to the total weight of the polymeric solution.

According to a preferred embodiment of the present invention, said lamellar material has lamellas having a thickness ranging from 0.01 nm to 30 nm, preferably ranging from 0.2 nm to 15 nm, even more preferably ranging from 0.5 nm to 2 nm.

According to a preferred embodiment of the present invention, said lamellar material can be selected, for example, from phyllosilicates such as: smectites, for example montmorillonite, bentonite, nontronite, beidellite, volkonskoite, hectorite, saponite, sauconite, magadite, stevensite, or mixtures thereof; vermiculite; halloysite; sericite; aluminate oxides; hydrotalcite; or mixtures thereof. Montmorillonite is preferred. Said lamellar material normally contains interchangeable cations, such as, for example, sodium

(Na^+), calcium (Ca^{2+}), potassium (K^+), or magnesium (Mg^{2+}), present on the surface of the lamellae.

According to a further preferred embodiment of the present invention, said lamellar material can be modified with alkyl ammonium or alkyl phosphonium salt, which can be selected, for example, from quaternary ammonium or phosphonium salts having general formula (I):



(I)

wherein:

- Y represents N or P;
- R_1, R_2, R_3 and R_4, equal to or different from each other, represent a linear or branched C_1-C_{20} alkyl or hydroxyalkyl group; a linear or branched C_2-C_{20} alkenyl or hydroxyalkenyl group; a group $-R_5-SH$ or $-R_5-NH$ wherein R_5 represents a linear or branched C_1-C_{20} alkylene group; a C_6-C_{18} aryl group; a C_7-C_{20} arylalkyl or alkylaryl group; a C_5-C_{18} cycloalkyl group; said cycloalkyl group optionally containing heteroatoms such as, for example, oxygen, nitrogen, sulfur;
- X^{n-} represents an anion such as, for example, a chloride ion, a sulfate ion, a phosphate ion;

- from 0.005% by weight to 1% by weight, preferably from 0.008% by weight to 0.8% by weight, with respect to the total weight of the dry elastomeric polymer, of at least one lamellar material, *said lamellar material having lamellae having a thickness ranging from 0.01 nm to 30 nm and being selected from phyllosilicates such as: smectites, for example montmorillonite, bentonite, nontronite, beidellite, volkonskoite, hectorite, saponite, sauconite, magadite, stevensite, or mixtures thereof; vermiculite; halloysite; sericite; aluminate oxides; hydrotalcite; or mixtures thereof;*
- from 0.0005 by weight to 1% by weight, preferably from 0.0008% by weight to 0.8% by weight, with respect to the total weight of the dry elastomeric polymer, of at least one cationic surfactant.

For the purposes of the present description and of the following claims, the definitions of the numerical ranges always include the extremes, unless otherwise specified.

According to a preferred embodiment of the present invention, said elastomeric polymer can be selected from: polybutadiene (BR); polyisoprene (IR); unsaturated styrene copolymers with a random, block, tapered distribution, linear or branched such as, for example, styrene-butadiene (SB) copolymers, styrene-butadiene-styrene (SBS) copolymers, styrene-isoprene-

styrene (SIS) copolymers; saturated styrene copolymers, with a random, block, tapered distribution, linear or branched such as styrene-ethylene-propylene (SEP) copolymers, styrene-ethylene/butylene-styrene (SEBS) copolymers, styrene-ethylene-propylene-styrene (SEPS) copolymers; or mixtures thereof. Styrene-butadiene (SB) copolymers and styrene-butadiene-styrene (SBS) copolymers, are preferred.

According to a preferred embodiment of the present invention, said polymeric solution comprises at least one non-polar organic solvent which can be selected, for example, from: butane, pentane, cyclopentane, hexane, benzene, toluene, cyclohexane, methylcyclohexane, chlorobenzene, or mixtures thereof. Hexane, cyclohexane, or mixtures thereof, are preferred.

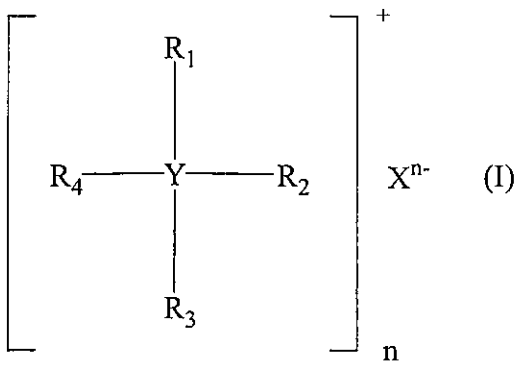
According to a preferred embodiment of the present invention, said elastomeric polymer is present in said polymeric solution in a quantity ranging from 2% by weight to 30% by weight, more preferably ranging from 5% by weight to 20% by weight, with respect to the total weight of the polymeric solution.

According to a preferred embodiment of the present invention, said lamellar material has lamellae having a thickness ranging from 0.2 nm to 15 nm, even more preferably ranging from 0.5 nm to 2 nm.

According to a preferred embodiment of the present invention, said lamellar material is montmorillonite. Said lamellar material normally contains

interchangeable cations, such as, for example, sodium (Na^+), calcium (Ca^{2+}), potassium (K^+), or magnesium (Mg^{2+}), present on the surface of the lamellae.

According to a further preferred embodiment of the present invention, said lamellar material can be modified with alkyl ammonium or alkyl phosphonium salt, which can be selected, for example, from quaternary ammonium or phosphonium salts having general formula (I):



(I)

wherein:

- Y represents N or P;
- R_1, R_2, R_3 and R_4, equal to or different from each other, represent a linear or branched C_1-C_{20} alkyl or hydroxyalkyl group; a linear or branched C_2-C_{20} alkenyl or hydroxyalkenyl group; a group $-R_5-SH$ or $-R_5-NH$ wherein R_5 represents a linear or branched C_1-C_{20} alkylene group; a C_6-C_{18} aryl group; a C_7-C_{20} arylalkyl or alkylaryl group; a C_5-C_{18} cycloalkyl group; said cycloalkyl group optionally containing heteroatoms such as, for example, oxygen, nitrogen, sulfur;
- X^{n-} represents an anion such as, for example, a chloride ion, a sulfate ion, a phosphate ion;