CLAIMS

1. An aqueous polyurethane dispersion comprising,

- anionic polyurethane particles comprising both free pending carboxylate groups of formula $-COO^- M^+$ where M^+ is a cation resulting from neutralization of carboxylic acid groups with a base, and pending carboxylate ester groups resulting from esterification of free carboxylic acid groups with an epoxysilane,

- crosslinking particles made of water-insoluble transition metal compounds having a solubility in distilled water at 20 °C of less than 0.001 %.

2. The aqueous polyurethane dispersion according to claim 1, wherein the water-insoluble transition metal compounds are selected from transition metal salts, transition metal oxides and transition metal hydroxides, preferably from transition metal oxides.

3. The aqueous polyurethane dispersion according to claim 1 or 2, wherein the transition metal is selected from the group consisting of zinc, aluminum, tin, and tungsten, zinc and aluminum being preferred.

4. The aqueous polyurethane dispersion according to any of the preceding claims wherein the weight ratio of crosslinking particles to anionic polyurethane particles is comprised between 0.01 and 0.40, preferably between 0.2 and 0.25 and more preferably between 0.03 and 0.15.

5. The aqueous polyurethane dispersion according to any of the preceding claims where the crosslinking particles have a weight average particle diameter, measured by laser diffraction, comprised between 1.0 µm and 20 µm, preferably between 1.5 and 10 µm.

6. The aqueous polyurethane dispersion according to any of the preceding claims wherein the epoxysilane is selected from the group consisting of 3-glycidyloxypropyl-trialcoxysilanes, 3-glycidyloxypropyl-dialcoxyalkylsilanes, epoxycyclohexylethyltrialcoxy-silanes, epoxycyclohexyl-ethyldialcoxyalkylsilanes, and water-soluble epoxysilane oligomers.

7. The aqueous polyurethane dispersion according to any of the preceding claims, further comprising from 0.1 to 70 weight %, preferably from 1.0 to 40 weight % of mineral fillers.

8. The aqueous polyurethane dispersion according to any of the preceding claims further comprising a dispersing agent, preferably selected

from non-ionic surfactants and/or a thickening agent preferably selected from water-soluble organic polymers.

9. The aqueous polyurethane dispersion according to any of the preceding claims, wherein the amount of water is comprised between 30 % and 95 %, preferably between 35 and 75 % with respect to the total weight of the dispersion.

10. A method of preparing an aqueous polyurethane dispersion according to any of claims 1 – 9, comprising

- esterifying pendant carboxylate groups of an anionic polyurethane dispersion by reacting them with an epoxysilane,
- dispersing water-insoluble transition metal compound particles in the anionic polyurethane dispersion, said water-insoluble transition metal compounds having a solubility in distilled water at 20 °C of less than 0.001 %.

11. A method of preparing an aqueous polyurethane dispersion according to claim 10, wherein the amount of epoxysilane used for esterification is comprised between 0.3 and 5.0 % by weight, preferably between 0.4 and 4.0 % by weight and more preferably between 0.5 and 3.0 % by weight with respect to the dry weight of the polyurethane dispersion.

12. A method of coating a substrate comprising applying an aqueous polyurethane dispersion according to any of the preceding claims on a substrate and letting it dry, preferably without applying any heat or radiation.

13. Use of an aqueous polyurethane dispersion according to any of claims 1 to 9, as a water-proofing composition of substrates, as a coating composition of wood, floorings, stone, concrete, renders, plasters, metal or polymer substrates, as an adhesive, as a sealant, as primers.