The invention relates to an antistatic floor covering, especially a laminate floor with a counteracting coating on the back and/or with a damping substrate made from a binding agent plus fillers which is, or can be, attached to the back of the floor covering in an at least partial manner.

The disadvantage of laminate floorings of this type is that they build up an electrostatic charge.

The task of this invention is therefore to identify another way of avoiding or reducing the accumulation of electrostatic charge in floors of this type.

According to the invention, this task is solved in that the counteracting coating disposed on the back of the laminate floor is capable of dissipating electrostatic charge, and/or in that electrically conducting materials are used as fillers in the damping substrate disposed on the back of the flooring.
ANTISTATIC FLOOR COVERING

[0001] The invention relates to an antistatic floor covering, especially a laminate floor with a counteracting coating on the back and/or with a damping substrate made from a binding agent plus fillers which is, or can be, attached to the back of the floor covering in an at least partial manner.

[0002] Laminate floors of this type have numerous advantages; in particular, they are long-lasting and easy to clean. Problems which existed earlier, particularly with laminate floors made from high-density fibreboard, which made relatively loud noises when walked on, have been solved by means of sound-damping devices attached to the back of the laminate floors.

[0003] According to recent investigations, a further disadvantage of the type of floor covering provided with a coating and/or a veneer on the top surface, is that the latter may accumulate an electrostatic charge and/or that persons who walk on these types of laminate floors may, in unfavourable circumstances, also accumulate electrostatic charge. The reason for this is to be found in the insulating properties of the melamine resin surfaces or thick varnishes.

[0004] It is known that electrons are transferred whenever materials rub against each other. One material loses electrons and becomes positively charged, whilst the other gains electrons, and becomes negatively charged. The imbalance in the numbers of positively charged particles (protons) and negatively charged particles (electrons) creates electrostatic energy. This is not a problem as long as the relative air humidity is 65% or more, as the air humidity then compensates sufficiently. When the air is drier, however, there is a greater electrostatic charge. In typically dry environments such as e.g. hospitals and offices, this can lead to the accumulation of a considerable static charge, which is further increased by treating the floors with cleaning agents or cleaning devices. Any isolated contact with a conducting material then leads to a sudden discharge, sometimes also accompanied by tiny electric arcs. This is a disadvantage for sensitive persons such as pacemakers. Furthermore, particularly sensitive electronic equipment such as patient monitors, cardiographic systems and even computers, printers, laptops and similar, also react negatively to sudden discharges such as these. This can lead to anything from malfunctions to the destruction of individual, particularly sensitive parts of such equipment.

[0005] Given that it is impossible to abandon coatings for laminate floors, the task of this invention is to identify another way of avoiding or reducing the accumulation of electrostatic charge in floors of this type.

[0006] According to the invention, this task is solved in that the counteracting coating disposed on the back of the laminate floor is capable of dissipating electrostatic charge, and/or in that electrically conducting materials are used as fillers in the damping substrate disposed on the back of the floor.

[0007] Surprisingly, tests have showed that coatings of materials or paper capable of dissipating electrostatic charge which are glued directly to the laminate floor can reduce the electrostatic charge transferred to a person to much below the critical values, in particular the current limit value of 2 kV. To conform to EN 1815 for antistatic elastic floorings and ISC 6356 for textile floorings, body voltage at 23°C and 25% relative air humidity should not exceed 2 kV. Although the synthetic resin surfaces of conventional laminate floorings cause a big build-up of electrostatic charge which alters the ambient environment, thereby leading to changes in the ratio of positive and negative air particles and causing the kind of artificial conditions associated with a storm, the dissipating backing according to the invention makes it possible to more than half the values. Hence the value for a laminate floor of this type, provided with a damping substrate, is reduced from 3.0 kV to 1.5 kV when walked on with shoes with rubber soles; when walked on with normal shoes, it is reduced from 2.8 kV to only 1.0 kV, measured at 21°C and 50% relative air humidity. Similar results are obtained not only when using a laminate floor with a sound-damping substrate, but also with one incorporating suitably dissipating ribbed boards, wool-felt boards or other backing materials.

[0008] The electrostatically dissipating counteracting coating is preferably contrived from a metal foil coating, metallic sheeting or similar.

[0009] Suitable fillers include dissipating carbons, especially in the form of powders, fibres or granulate, as well as electrically conducting graphite powder, iron powder, iron filings or similar. Electrically dissipating ammonium salts and/or metal oxides are also possible.

[0010] It is particularly advantageous if the binding agent in the sound-damping substrate is also contrived from electrically dissipating formulations, especially resins of this type.

[0011] The result can be further improved by using an electrostatically dissipating adhesive, especially a thermoplastic adhesive (hotmelt) to attach the flooring, damping substrate and/or counteracting coating.

[0012] The invention will be explained in more detail below with reference to the drawings, of which there is only one:

[0013] FIG. 1: showing a perspective view of a laminate flooring according to the invention.

[0014] A flooring element designated in general as 1, has a top surface 2, a bottom surface 3, and, positioned at opposite sides, a groove 4 and a tongue 5. A sound-damping device 8, comprising a binding agent 6 and fillers 7, is attached to the bottom surface 3 of flooring element 1. The binding agent 6 may be a polyurethane (PU), a polyethylene (PE), latex, polyvinyl chloride (PVC), acrylate or a foamed 2-component polyurethane (PU). The formulations used will preferably be ones capable of electrical dissipation, especially resins.

[0015] The fillers 7 can be dissipating carbons in the form of powders, fibres and/or granulate. Electrically conducting graphite powder, iron powder, iron filings or similar can also be used alone or in combination, also with ammonium salts and/or metal oxides.

[0016] A counteracting coating 9 is laminated onto bottom surface 3. It is electrostatically dissipating, too, and is preferably made from a metal foil coating or metal sheeting. An electrostatically dissipating adhesive, especially a thermoplastic adhesive (hotmelt) is used to attach flooring element 1, sound-damping substrate 8 and/or counteracting coating 9.
The proposed means make it possible to virtually halve the build-up of electrostatic charge in existing laminate floor coverings. This is true not only of floor coverings \text{1} with sound-damping substrates \text{8}, but also of other floor coverings \text{1} with suitably dissipating ripped boards, woollen felt boards or other backing materials.

1. A floor covering, especially a laminate floor with a counteracting coating on the back and/or with a damping substrate made from a binding agent plus fillers which is, or can be, attached to the back of the floor covering in an at least partial manner,

characterised in that

the fillers \text{(7)} are electrically conducting materials and/or in that the counteracting coating \text{(9)} is electrostatically dissipating.

2. The floor covering of claim 1,

characterised in that

the electrostatically dissipating counter coating \text{(9)} is contrived from a metal foil coating, metal sheeting or similar.

3. The floor covering of claim 1,

characterised in that

the fillers \text{(7)} are a dissipating carbon, especially in the form of powders, fibres and/or granulate.

4. The floor covering of claim 1 and/or at least one of the following claims,

characterised in that

the fillers \text{(7)} are electrically conducting graphite powder, iron powder, iron filings or similar.

5. The floor covering of claim 1 and/or at least one of the following claims,

characterised in that

electrically conducting ammonium salts and/or metal oxides are used as additives.

6. The floor covering of claim 1 and/or at least one of the following claims,

characterised in that

electrically dissipating formulations, in particular resins, are used for the binding agent \text{(6)}.

7. The floor covering of claim 1 and/or at least one of the following claims,

characterised in that

an electrostatically dissipating adhesive, in particular a thermoplastic adhesive (hotmelt) is used to attach the floor covering \text{(1)}, damping substrate \text{(8)} and/or counteracting coating \text{(9)}.