US 20050217792A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2005/0217792 A1**

Sjoberg et al. (43) **Pub. Date: Oct. 6, 2005**

(54) **PROCESS FOR THE MANUFACTURING OF DECORATIVE LAMINATE**

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(21) Appl. No.: **11/129,497**

(22) Filed: **May 16, 2005**

Related U.S. Application Data

(63) Continuation of application No. 10/450,153, filed on Jul. 7, 2003, now Pat. No. 6,893,713, filed as 371 of international application No. PCT/SE01/02704, filed on Dec. 7, 2001.

(30) **Foreign Application Priority Data**

Dec. 11, 2000 (SE) 0004562-5

Publication Classification

(51) **Int. Cl.**[7] **B32B 31/26**

(52) **U.S. Cl.** **156/307.7**

(57) **ABSTRACT**

A process for the manufacturing of a decorative laminate, which laminate comprises an upper decorative and abrasion resistant thermosetting laminate layer and a carrying core. The upper side of the core is provided with the abrasion resistant thermosetting laminate with a dampening foil of an elastomer arranged between the upper side of the core and the abrasion resistant thermosetting laminate, which elastomer and which thermosetting laminate are joined with each other and with the core by means of pressing.

PROCESS FOR THE MANUFACTURING OF DECORATIVE LAMINATE

[0001] The present invention relates to a process for the manufacturing of a decorative thermosetting laminate with a damping layer intended to decrease the sound-level.

[0002] Products coated with thermosetting laminate are common nowadays. They are foremost used where the demands on abrasion resistance are great, but also where resistance towards different chemicals and moisture are demanded. As example of such products can be mentioned floors, floor beadings, work tops, desk tops and wall panels.

[0003] The thermosetting laminate most often consists of a number of base sheets with decor sheet arranged closest to the surface. The decor sheet can be provided with a desired decor or pattern. Such laminates are very hard in order to withstand the wear they are exposed to. This will unfortunately lead to a high noise level when hard objects are retarded suddenly by the laminate surface, such as hard heels towards a laminate surface.

[0004] It is desirable to be able to muffle the sound level in locales with a floor surface of laminate, specially in locales where shoes normally are used.

[0005] It has, through the present invention, been made possible to meet the above mentioned desires and a thermosetting laminate with a lower noise level in respect of for example step noise, has been achieved. Accordingly, the invention relates to a process for the manufacturing of a decorative laminate, which laminate comprises an upper decorative and abrasion resistant thermosetting laminate layer and a carrying core. The invention is characterised in that the upper side of the core is provided with the abrasion resistant thermosetting laminate with a dampening foil of an elastomer arranged between the upper side of the core and the abrasion resistant thermosetting laminate. The elastomer and the thermosetting laminate are joined with each other and with the core by means of pressing.

[0006] The thermosetting laminate is preferably constituted by one or more decor papers impregnated with melamine-formaldehyde resin and one or more overlay sheets impregnated with melamine formaldehyde resin arranged on top of the decor papers. The thermosetting laminate may further possibly constitute one or more conventional resin impregnated underlay papers, arranged under the decor paper or decor papers, which underlay papers preferably contains phenol-formaldehyde resin. The different papers are laminated together under increased pressure and increased temperature. At least one of the sheets impregnated with thermosetting resin, preferably the outermost, is provided with hard particles of for example silicon oxide, aluminium oxide and/or silicon carbide with an average size of 1-100 μm, preferably around 5-60 μm. The thermosetting laminate suitably has a thickness in the range 0.3 mm-1.2 mm, preferably 0.3 mm-0.9 mm and a density in the range 1250-1500 kg/m^3.

[0007] The carrying core is suitably constituted by a particle board or a fibre board. It is however possible to manufacture the carrying core from a polymer based sheet comprising organic and/or inorganic particles.

[0008] The dampening foil is preferably constituted of a thermoplastic elastomer. The dampening foil suitably has elasticity compression coefficient in the range 0.5-2.7 Mpa, preferably 0.8-2.0 Mpa as measured according to ISO 3386-1 with supplement from ISO 7214. The dampening foil preferably has a thickness in the range 0.1-0.7 mm, preferably 0.1-0.5 mm. The dampening foil is suitably constituted of an expanded physically cross-linked polyolefin with closed cells and suitably has a density in the range 150-400 kg/m^3, preferably 180-330 kg/m^3.

[0009] The dampening foil and the thermosetting laminate is suitably joined with the carrying core by means of glue and pressure. The glue can hereby be constituted by a water-soluble standard glue or a so-called melt-glue. In the latter case the dampening foil, the carrying core and the thermosetting laminate joined via heat and pressure. It is also possible to let the dampening foil itself work as a melt-glue layer. The dampening foil is then suitably non-expanded and will then have a density in the range 400-900 kg/m^3.

1. A process for the manufacturing of a decorative laminate, which laminate comprises an upper decorative and abrasion resistant thermosetting laminate layer and a carrying core, wherein the carrying core is constituted by particle board or fibre board, the upper side of the core is provided with the abrasion resistant thermosetting laminate with a dampening foil of an elastomer arranged between the upper side of the core and the abrasion resistant thermosetting laminate which elastomer and which thermosetting laminate are joined with each other and with the core by means of pressing.

2. A process according to claim 1, wherein the thermosetting laminate is constituted by one or more decor papers impregnated with melamine-formaldehyde resin and one or more overlay sheets impregnated with melamine formaldehyde resin arranged on top of the decor papers and optionally one or more conventional resin impregnated underlay papers, arranged under the decor paper or decor paper which papers are laminated together under increased pressure and increased temperature.

3-4. (canceled)

5. A process according to claim 2, wherein at least one of the sheets impregnated with thermosetting resin is provided with hard particles.

6. A process according to claim 2 wherein the thermosetting laminate has a thickness in the range 0.3 mm-1.2 mm.

7. A process according to claim 2, wherein the thermosetting laminate has a density in the range 1250-1500 kg/m^3.

8. A process according to claim 1, wherein the dampening foil is constituted of a thermoplastic elastomer.

9. A process according to claim 8, wherein the dampening foil has elasticity compression coefficient in the range 0.5-2.7 MPa.

10. A process according to claim 8, wherein the dampening foil has a thickness in the range 0.1-0.7 mm.

11. A process according to claim 8, wherein the dampening foil has a density in the range 150-400 kg/m^3.

12. A process according to claim 1, wherein the dampening foil and the thermosetting laminate is joined with the carrying core by means of glue and pressure.

13. A process according to claim 1, wherein the dampening foil and the thermosetting laminate is joined with the carrying core by means of melt-glue, heat and pressure.

14. A process according to claim 2, wherein the thermosetting laminate is constituted one or more conventional resin impregnated underlay papers, arranged under the decor paper or decor papers.

15. A process according to claim 5, wherein the hard particles are selected from the group consisting of silicon oxide, aluminium oxide and silicon carbide.

16. A process according to claim 5, wherein the hard particles have an average size of between about 5-60 μm.

17. A process according to claim 5, wherein the hard particles have an average size of between about 1 and 100 μm.

18. A process according to claim 2, wherein the thermosetting laminate has a thickness in the range 0.3 mm-0.9 mm.

19. A process according to claim 8, wherein the dampening foil has elasticity compression coefficient in the range 0.8-2.0 MPa.

20. A process according to claim 8, wherein the dampening foil has a thickness in the range 0.1-0.5 mm.

21. A process according to claim 8, wherein the dampening foil has a density in the range 180-330 kg/m^3.

22. A process according to claim 2, wherein the one or more underlay papers comprise a phenol-formaldehyde resin.

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