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(54) Method for roller-coating rough surfaces

Verfahren zur Walzenbeschichtung von rauhen Oberflächen

Procédé pour peindre des surfaces rugueuses au rouleau

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Description

[0001] This invention relates to a method for roller coating rough surfaces.

[0002] Rough surfaces are frequently found on sawn wood structures such as garden fences or decking. The surfaces are characterised by numerous irregular recesses all of which have to be coated if the entire surface is to be covered uniformly. Hitherto, the coating of such recesses has required the use of a brush and very fluid coating compositions whose mid-shear and high shear viscosities are as low as 0.08 Pa.sec at 20°C and 0.025 Pa.sec at 25°C respectively. Such low viscosity coating compositions are too fluid for application by paint rollers. As compared with brush-application, roller application is quite quick and so the inability to use rollers in coating rough surfaces means that the coating of such surfaces is a slower process than would be the case if rollers could be used.

[0003] One of the objects of this invention is to provide a method for coating rough surfaces which can use a roller as the application tool.

[0004] Accordingly this invention provides a method for applying a coating composition onto a rough surface using a roller having an outer sleeve provided with fibres extending outwardly from the sleeve wherein the coating composition has a Rotothinner mid-shear viscosity at 20°C of at least 5 Pa.sec (Pascal.second) and an ICI Cone & Plate high shear viscosity at 25°C of at least 0.03 Pa.sec and the fibres have a length of at least 3mm and preferably from 7 to 25mm. It has been found that the use of very high viscosity coating compositions in combination with a roller having long fibres allows the compositions to be forced into recesses of the type found on sawn wood of the type used in making garden fences and decking. Preferably the Rotothinner mid-shear viscosity lies in the range 60 to 130 Pa.sec and the ICI Cone & Plate viscosity lies in the range 0.07 to 0.1 Pa.sec. The outer sleeve is preferably made from sheepskin, or woven or knitted polyester, polyamide or woollen fabrics.

[0005] Improved coating can be achieved if the outer sleeve is carried on a resiliently compressible inner sleeve. The compressible inner sleeve is preferably formed from a foamed material such as foamed polyurethane, foamed neoprene, foamed butadienestyrene rubber or foamed polyethylene or ethylene-vinyl acetate copolymer including crosslinked polyethylene or its crosslinked copolymers. Preferably the density of the foamed material is from 50 to 80% of that of the unfoamed material.

[0006] Conventionally, rollers are used mounted on a central axle attached to a handle so that in use, the roller has a proximal end attached to the handle and a distal end remote from the handle. In order to coat overlapping panels efficiently, it is preferred to extend the outer sleeve around the distal end of the roller attached to a handle.

[0007] A preferred roller for use in this invention will now be described with reference to the drawings in which

Figure 1 is a transverse section through a roller for use in the method according to this invention and

Figure 2 shows on a smaller scale, a perspective view of the roller shown in Figure 1 when attached to handle.

[0008] Figure 1 shows a roller 1 having fibres 2 extending essentially radially outwardly from an outer sleeve 3 which surrounds a resiliently compressible foamed inner sleeve 4 mounted on a support 5 which in turn is rotatably mounted on an axle 6.

[0009] From Figure 2, it can be seen that axle 6 is rigidly connected to a handle 7 by shaped metal bar 8. Outer sleeve 3 extends around distal end 9 of roller 1 so as to facilitate the coating of overlapping panels.

[0010] A roller for use in the method of this invention has an outer sleeve provided with fibres extending outwardly from the sleeve wherein the fibres have a length of at least 3mm and preferably from 7 to 25mm and the outer sleeve preferably surrounds a resiliently compressible inner sleeve.

[0011] For the purposes of this invention, ICI Cone & Plate high shear viscosity is determined at 25°C as follows:

[0012] Fixed shear-rate viscosity is measured using the cone and plate technique described in ASTM Test D4287-87, but with conditions adapted to produce a shear rate of 10,000/sec. The cone has an angle of 0.5° and a radius of 7.5mm.

[0013] Rotothinner mid-shear viscosity is determined at 20°C using the Sheen/ICI Rotothinner (Electrical Model) described in the Sheen leaflet headed "Viscosity Sheen" published by Sheen Instruments Limited of Kingston on Thames, Surrey, England.

Claims

1. A method for applying a coating composition onto a rough surface using a roller having an outer sleeve provided with fibres extending outwardly from the sleeve wherein the coating composition has a Rotothinner mid-shear viscosity at 20°C of at least 5 Pa•sec and an ICI Cone & Plate high shear viscosity at 25°C of at least 0.03 Pa•sec and the fibres have a length of at least 3mm.
2. A method according to Claim 1 wherein the length of the fibres is from 7 to 25mm.
3. A method according to Claim 1 or Claim 2 wherein the outer sleeve is carried on a resiliently compressible inner sleeve.

4. A method according to Claim 3 wherein the inner sleeve is formed from a foamed material.
5. A method according to Claim 2 wherein the density of the foamed material is from 50 to 80% of the density of the material when unfoamed.
6. A method according to any one of the preceding Claims wherein the outer sleeve of the roller extends around one end of the roller.

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Patentansprüche

1. Verfahren zum Auftragen eines Anstrichs auf eine rauhe Oberfläche unter Verwendung einer Walze mit einer äußeren Hülse, die mit Fasern versehen ist, die sich von der Hülse nach außen erstrecken, wobei die Anstrichzusammensetzung eine Rototinner-Viskosität bei mittlerer Scherung bei 20°C von wenigstens 5 Pa.s und eine ICI Kegel & Platten-Viskosität bei 25°C von wenigstens 0,03 Pa.s aufweist, und die Fasern eine Länge von wenigstens 3 mm aufweisen.
2. Verfahren nach Anspruch 1, wobei die Länge der Fasern von 7 bis 25 mm beträgt.
3. Verfahren nach Anspruch 1 oder Anspruch 2, wobei die äußere Hülse von einer elastisch komprimierbaren inneren Hülse getragen wird.
4. Verfahren nach Anspruch 3, wobei die innere Hülse von einem geschäumten Material gebildet wird.
5. Verfahren nach Anspruch 2, wobei die Dichte des geschäumten Materials 50 bis 80% der Dichte des Material im ungeschäumten Zustand beträgt.
6. Verfahren nach irgendeinem der vorausgehenden Ansprüche, wobei sich die äußere Hülse der Walze um ein Ende der Walze herum erstreckt.

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Revendications

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1. Procédé pour appliquer une composition de revêtement sur une surface rugueuse à l'aide d'un rouleau ayant un manchon extérieur pourvu de fibres s'étendant vers l'extérieur depuis le manchon, dans lequel la composition de revêtement a une viscosité à cisaillement moyen à 20°C d'au moins 20 Pa.s, mesurée à l'aide d'un viscosimètre Rototinner, et une viscosité à cisaillement élevé à 25°C d'au moins 0,03 Pa.s, mesurée à l'aide d'un viscosimètre ICI à cône et plan, et les fibres ont une longueur d'au moins 3 mm.

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2. Procédé selon la revendication 1, dans lequel la longueur des fibres est de 7 à 25 mm.
3. Procédé selon la revendication 1 ou la revendication 2, dans lequel le manchon extérieur est porté sur un manchon intérieur élastiquement compressible.
4. Procédé selon la revendication 3, dans lequel le manchon intérieur est en matière expansée.
5. Procédé selon la revendication 2, dans lequel la densité de la matière expansée est de 50 à 80% de la densité de la matière à l'état non expansé.
6. Procédé selon l'une quelconque des revendications précédentes, dans lequel le manchon extérieur du rouleau s'étend autour d'une extrémité du rouleau.

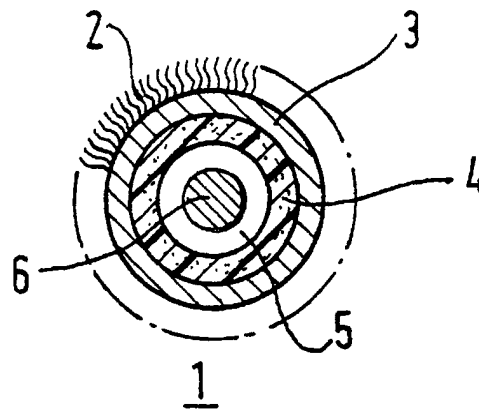


FIG.1.

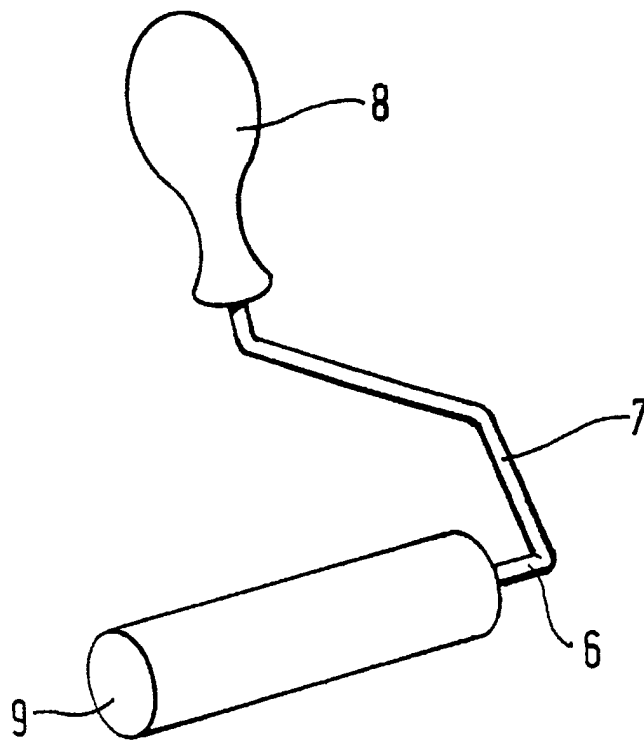


FIG.2.