

Title (en)
Method for producing a structured surface

Title (de)
Verfahren zur Herstellung einer strukturierten Oberfläche

Title (fr)
Procédé de fabrication d'une surface structurée

Publication
EP 2327482 A1 20110601 (DE)

Application
EP 09405209 A 20091126

Priority
EP 09405209 A 20091126

Abstract (en)
The method for producing a structured surface on a carrier material (12), comprises coating the carrier material with a silicate-based sol-gel-lacquer, partially hardening the coating, structuring the partially-hardened coating through stamping by a matrix (16), and completely hardening the stamped coating (14). The matrix for producing the structured surface comprises a stamping structure (18) with three dimensional stamping elements (20) with dimensions in a range of 30 nm to 30 µm. The partial hardening and complete hardening of the coating are continuously carried out at 140-160[deg] C. The method for producing a structured surface on a carrier material (12), comprises coating the carrier material with a silicate-based sol-gel-lacquer, partially hardening the coating, structuring the partially-hardened coating through stamping by a matrix (16), and completely hardening the stamped coating (14). The matrix for producing the structured surface comprises a stamping structure (18) with three dimensional stamping elements (20) with dimensions in a range of 30 nm to 30 µm. The partial hardening and complete hardening of the coating are continuously carried out at 140-160[deg] C in a continuous furnace. The stamping is continuously carried out with a stamping roller as matrix or with a heating matrix or in a heating chamber. The partial hardening of the coating and the structuring are partially carried out in single process. The carrier material consists of aluminum or aluminum alloy. The sol-gel-lacquer is polysiloxane produced by acid-catalyzed hydrolysis and condensation of a mixture of a first solution containing alkoxy silane and a second solution containing a colloidal silicic acid. The first solution is a solution with a first and second alkoxy silane and a solvent mixed with the first solution. The first alkoxy silane is tetraethoxysilane and the second alkoxy silane is methyl triethoxysilane. The solvent of the first solution is a polar solvent such as alcohol or ethylacetate. The alcoholic solvent consists of glycol or glycol compound and is ethylene glycol or butoxyethanol.

Abstract (de)
Ein Verfahren zur Herstellung einer strukturierten Oberfläche auf einem Trägermaterial (12) ist durch die folgenden Schritte gekennzeichnet:
- Beschichten des Trägermaterials mit einem silikatbasierten Sol-Gel-Lack, - Teilaushärten der Beschichtung (14), - Strukturieren der teilausgehärteten Beschichtung (14) durch Prägen mittels einer Matrize (16), und - Vollaushärten der geprägten Beschichtung (14).

IPC 8 full level
B05D 3/12 (2006.01); **B05D 7/00** (2006.01)

CPC (source: EP)
B05D 3/12 (2013.01); **B05D 7/00** (2013.01); **B05D 3/0254** (2013.01); **B05D 5/08** (2013.01)

Citation (applicant)
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• WO 0186327 A1 20011115 - ALUSUISSE TECH & MAN AG [CH], et al
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• R. TAURINO ET AL.: "Facile preparation of superhydrophobic coatings by sol-gel processes", JOURNAL OF COLLOID AND INTERFACE SCIENCE, vol. 325, 2008, pages 149 - 156
• A. D. SOMMERS ET AL.: "Wetting phenomena on micro-grooved aluminum surfaces and modeling of the critical droplet size", JOURNAL OF COLLOID AND INTERFACE SCIENCE, vol. 328, 2008, pages 402 - 411
• CHAOWEI GUO ET AL.: "Large-Area Fabrication of a Nanostructure-Induced Hydrophobic Surface from a Hydrophilic Polymer", CHEMPHYS CHEM, vol. 5, 2004, pages 750 - 753

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[I] WO 2008142322 A2 20081127 - SAINT GOBAIN [FR], et al

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Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

Designated extension state (EPC)
AL BA RS

DOCDB simple family (publication)
EP 2327482 A1 20110601

DOCDB simple family (application)
EP 09405209 A 20091126