

CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

SEPARATING; MIXING

B05 SPRAYING OR ATOMISING IN GENERAL; APPLYING FLUENT MATERIALS TO SURFACES, IN GENERAL

(NOTE omitted)

B05D PROCESSES FOR APPLYING FLUENT MATERIALS TO SURFACES, IN GENERAL (conveying articles or workpieces through baths of liquid [B65G](#), e.g. [B65G 49/02](#))

NOTES

1. This subclass covers:
 - processes for applying liquids or other fluent materials to a surface or part of a surface, in general, by any mechanical or physical method and particularly processes producing a uniform distribution of liquids or other fluent materials on a surface;
 - pretreatment of surfaces to which liquids or other fluent materials are to be applied;
 - after-treatment of applied coatings.
2. Attention is drawn to the Note following the title of class [B05](#).

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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|-------------|---|-------|--|
| 1/00 | Processes for applying liquids or other fluent materials (B05D 5/00, B05D 7/00 take precedence) | 1/265 | • • {Extrusion coatings} |
| 1/002 | • {the substrate being rotated} | 1/28 | • performed by transfer from the surfaces of elements carrying the liquid or other fluent material, e.g. brushes, pads, rollers |
| 1/005 | • • {Spin coating} | | |
| 1/007 | • {using an electrostatic field (B05D 1/02 - B05D 1/16 take precedence)} | 1/283 | • • {Transferring monomolecular layers or solutions of molecules adapted for forming monomolecular layers from carrying elements} |
| 1/02 | • performed by spraying | 1/286 | • • {using a temporary backing to which the coating has been applied} |
| 1/025 | • • {using gas close to its critical state} | 1/30 | • performed by gravity only, i.e. flow coating |
| 1/04 | • • involving the use of an electrostatic field {(B05D 1/025 and B05D 1/14 take precedence)} | 1/305 | • • {Curtain coating} |
| 1/045 | • • • {on non-conductive substrates} | 1/32 | • using means for protecting parts of a surface not to be coated, e.g. using stencils, resists |
| 1/06 | • • • Applying particulate materials | 1/322 | • • {Removable films used as masks} |
| 1/08 | • • Flame spraying | 1/325 | • • • {Masking layer made of peelable film} |
| 1/10 | • • • Applying particulate materials | 1/327 | • • • {Masking layer made of washable film} |
| 1/12 | • • Applying particulate materials (B05D 1/06 , B05D 1/10 take precedence) | 1/34 | • Applying different liquids or other fluent materials simultaneously |
| 1/14 | • • • Flocking | 1/36 | • Successively applying liquids or other fluent materials, e.g. without intermediate treatment |
| 1/16 | • Flocking otherwise than by spraying | 1/38 | • • with intermediate treatment (intermediate treatment per se B05D 3/00) |
| 1/18 | • performed by dipping | 1/40 | • Distributing applied liquids or other fluent materials by members moving relatively to surface |
| 1/185 | • • {applying monomolecular layers (B05D 1/204 takes precedence)} | 1/42 | • • by non-rotary members |
| 1/20 | • • substances to be applied floating on a fluid | 1/60 | • {Deposition of organic layers from vapour phase (vapour phase deposition in general C23C 14/00 , C23C 16/00)} |
| 1/202 | • • • {Langmuir Blodgett films (LB films)} | 1/62 | • {Plasma-deposition of organic layers (plasma deposition in general C23C 14/00 , C23C 16/00)} |
| 1/204 | • • • • {LB techniques} | | |
| 1/206 | • • • • {LB troughs} | | |
| 1/208 | • • • • {After-treatment of monomolecular films} | | |
| 1/22 | • • using fluidised-bed technique (fluidised-bed technique in general B01J 8/24) | | |
| 1/24 | • • • Applying particulate materials | | |
| 1/26 | • performed by applying the liquid or other fluent material from an outlet device in contact with, or almost in contact with, the surface | | |

- 3/00 Pretreatment of surfaces to which liquids or other fluent materials are to be applied; After-treatment of applied coatings, e.g. intermediate treating of an applied coating preparatory to subsequent applications of liquids or other fluent materials (successively applying liquids or other fluent materials [B05D 1/36](#); drying ovens [F26B](#))**
- 3/002 . {Pretreatment}
 - 3/005 . . {Pretreatment for allowing a non-conductive substrate to be electrostatically coated}
 - 3/007 . {After-treatment}
 - 3/02 . by baking { ([B05D 3/04](#) takes precedence) }
 - 3/0209 . . {Multistage baking}
 - 3/0218 . . {Pretreatment, e.g. heating the substrate}
 - 3/0227 . . . {with IR heaters}
 - 3/0236 . . . {with ovens ([B05D 3/0227](#) takes precedence) }
 - 3/0245 . . . {with induction heating}
 - 3/0254 . . {After-treatment}
 - 3/0263 . . . {with IR heaters}
 - 3/0272 . . . {with ovens}
 - 3/0281 . . . {with induction heating}
 - 3/029 . . . {with microwaves}
 - 3/04 . by exposure to gases
 - 3/0406 . . {the gas being air}
 - 3/0413 . . . {Heating with air}
 - 3/042 . . . {Directing or stopping the fluid to be coated with air}
 - 3/0426 . . . {Cooling with air}
 - 3/0433 . . {the gas being a reactive gas}
 - 3/044 . . . {Pretreatment}
 - 3/0446 {of a polymeric substrate}
 - 3/0453 . . . {After-treatment}
 - 3/046 {Curing or evaporating the solvent}
 - 3/0466 . . {the gas being a non-reacting gas ([B05D 3/0406](#) takes precedence) }
 - 3/0473 . . . {for heating, e.g. vapour heating}
 - 3/048 . . . {for cooling}
 - 3/0486 . . {Operating the coating or treatment in a controlled atmosphere}
 - 3/0493 . . {using vacuum}
 - 3/06 . by exposure to radiation ([B05D 3/02](#) takes precedence ; plasma treatment [B05D 3/141](#))}
 - 3/061 . . {using U.V.}
 - 3/062 . . . {Pretreatment}
 - 3/063 {of polymeric substrates ([B05D 3/064](#) takes precedence) }
 - 3/064 {involving also the use of a gas}
 - 3/065 . . . {After-treatment}
 - 3/066 {involving also the use of a gas}
 - 3/067 {Curing or cross-linking the coating}
 - 3/068 . . {using ionising radiations (gamma, X, electrons) }
 - 3/08 . by flames
 - 3/10 . by other chemical means
 - 3/101 . . {Pretreatment of polymeric substrate}
 - 3/102 . . {Pretreatment of metallic substrates ([C23C](#) takes precedence) }
 - 3/104 . . {Pretreatment of other substrates}
 - 3/105 . . {Intermediate treatments}
 - 3/107 . . {Post-treatment of applied coatings}
 - 3/108 . . . {Curing}
 - 3/12 . by mechanical means
 - 3/14 . by electrical means
 - 3/141 . . . {Plasma treatment}
 - 3/142 {Pretreatment}
 - 3/144 {of polymeric substrates}
 - 3/145 . . . {After-treatment}
 - 3/147 {Curing}
 - 3/148 {affecting the surface properties of the coating}
 - 3/20 . {by magnetic fields}
 - 3/203 . . {pre-treatment by magnetic fields}
 - 3/207 . . {post-treatment by magnetic fields}
- 5/00 Processes for applying liquids or other fluent materials to surfaces to obtain special surface effects, finishes or structures**
- 5/005 . {Repairing damaged coatings}
 - 5/02 . to obtain a matt or rough surface
 - 5/04 . to obtain a surface receptive to ink or other liquid ([B05D 5/02](#), {[B41M 5/52](#)} take precedence)
 - 5/06 . to obtain multicolour or other optical effects ([B05D 5/02](#) takes precedence)
 - 5/061 . . {Special surface effect}
 - 5/062 . . . {Wrinkled, cracked or ancient-looking effect}
 - 5/063 . . . {Reflective effect ([B05D 5/067](#) takes precedence) }
 - 5/065 . . {having colour interferences or colour shifts or opalescent looking, flip-flop, two tones}
 - 5/066 . . . {achieved by multilayers}
 - 5/067 . . {Metallic effect}
 - 5/068 . . . {achieved by multilayers ([B05D 5/066](#) takes precedence) }
 - 5/08 . to obtain an anti-friction or anti-adhesive surface (rendering particulate materials free-flowing in general, e.g. making them hydrophobic [B01J 2/30](#))
 - 5/083 . . {involving the use of fluoropolymers}
 - 5/086 . . . {having an anchoring layer}
 - 5/10 . to obtain an adhesive surface
 - 5/12 . to obtain a coating with specific electrical properties
- 7/00 Processes, other than flocking, specially adapted for applying liquids or other fluent materials to particular surfaces or for applying particular liquids or other fluent materials {(coating of foodstuffs [A23P 20/17](#), [A23P 20/15](#), [A23P 20/18](#)) }**
- 7/02 . to macromolecular substances, e.g. rubber (treatment or coating of shaped articles made of macromolecular substances [C08J 7/00](#))
 - 7/04 . . to surfaces of films or sheets (producing layered products by applying coatings of pasty or pulverulent plastics [B29C 41/00](#))
 - 7/06 . to wood
 - 7/08 . . using synthetic lacquers or varnishes
 - 7/10 . . . based on cellulose derivatives
 - 7/12 . to leather (chemical treatment of leather [C14C](#); dyeing leather [D06P](#))
 - 7/14 . to metal, e.g. car bodies (involving a chemical reaction between the metal and the coating [C23](#))
 - 7/142 . . {Auto-deposited coatings, i.e. autophoretic coatings}
 - 7/144 . . . {After-treatment of auto-deposited coatings}
 - 7/146 . . {to metallic pipes or tubes (processes for coating the interior of pipes [B05D 7/222](#)) }
 - 7/148 . . {using epoxy-polyolefin systems in mono- or multilayers}
 - 7/16 . . using synthetic lacquers or varnishes

- 7/18 . . . based on cellulose derivatives
- 7/20 . to wires (for insulating electric cables [H01B 13/16](#))
- 7/22 . to internal surfaces, e.g. of tubes
- 7/222 . . {of pipes}
- 7/225 . . . {Coating inside the pipe}
- 7/227 . . {of containers, cans or the like}
- 7/24 . for applying particular liquids or other fluent materials
- 7/26 . . synthetic lacquers or varnishes ([B05D 7/08](#), [B05D 7/16](#) take precedence)
- 7/50 . {Multilayers}

NOTE

A possible inorganic pretreatment or coating on the substrate such as chromatation, phosphatation, plating, is not counted as a layer. This group covers mostly multilayers characterised by each layer and the succession of them (laminates in general [B32B](#))

- 7/51 . . {One specific pretreatment, e.g. phosphatation, chromatation, in combination with one specific coating (pretreatment of metallic substrates [C23C](#); pretreatment before coating in general [B05D 3/00](#))}
- 7/52 . . {Two layers}
- 7/53 . . . {Base coat plus clear coat type}
- 7/532 {the two layers being cured or baked together, i.e. wet on wet}
- 7/5323 {the two layers being applied simultaneously}
- 7/534 {the first layer being let to dry at least partially before applying the second layer ([B05D 7/538](#) takes precedence)}
- 7/536 {each layer being cured, at least partially, separately}
- 7/538 {No curing step for the last layer}
- 7/5383 {No curing step for any layer}
- 7/5385 {the two layers being applied simultaneously}
- 7/54 . . . {No clear coat specified}
- 7/542 {the two layers being cured or baked together}
- 7/5423 {the two layers being applied simultaneously}
- 7/544 {the first layer is let to dry at least partially before applying the second layer}
- 7/546 {each layer being cured, at least partially, separately}
- 7/548 {No curing step for the last layer}
- 7/5483 {No curing step for any layer}
- 7/5485 {the two layers being applied simultaneously}
- 7/56 . . {Three layers or more}
- 7/57 . . . {the last layer being a clear coat}
- 7/572 {all layers being cured or baked together}
- 7/5723 {all layers being applied simultaneously}
- 7/574 {at least some layers being let to dry at least partially before applying the next layer ([B05D 7/577](#) takes precedence)}
- 7/576 {each layer being cured, at least partially, separately}
- 7/577 {some layers being coated "wet-on-wet", the others not}

- 7/578 {No curing step for the last layer}
- 7/5783 {No curing step for any layer}
- 7/5785 {all layers being applied simultaneously}
- 7/58 . . . {No clear coat specified}
- 7/582 {all layers being cured or baked together}
- 7/5823 {all layers being applied simultaneously}
- 7/584 {at least some layers being let to dry, at least partially, before applying the next layer ([B05D 7/587](#) takes precedence)}
- 7/586 {each layer being cured, at least partially, separately}
- 7/587 {some layers being coated "wet-on-wet", the others not}
- 7/588 {No curing step for the last layer}
- 7/5883 {No curing step for any layer}
- 7/5885 {all layers being applied simultaneously}

2201/00 Polymeric substrate or laminate

- 2201/02 . Polymeric substrate
- 2201/04 . Laminate
- 2201/06 . . Laminate of which the last layer is not a polymer

Substrate**2202/00 Metallic substrate**

- 2202/10 . based on Fe
- 2202/15 . . Stainless steel
- 2202/20 . based on light metals
- 2202/25 . . based on Al
- 2202/30 . based on refractory metals (Ti, V, Cr, Zr, Nb, Mo, Hf, Ta, W)
- 2202/35 . . based on Ti
- 2202/40 . based on other transition elements
- 2202/45 . . based on Cu

2203/00 Other substrates

- 2203/20 . Wood or similar material
- 2203/22 . Paper or cardboard
- 2203/24 . Leather
- 2203/30 . Other inorganic substrates, e.g. ceramics, silicon
- 2203/35 . . Glass

2210/00 Applying material to more than three types of substrate materials**2252/00 Sheets**

- 2252/02 . of indefinite length
- 2252/04 . of definite length in a continuous process
- 2252/10 . Applying the material on both sides

Shape of substrate**2254/00 Tubes**

- 2254/02 . Applying the material on the exterior of the tube
- 2254/04 . Applying the material on the interior of the tube
- 2254/06 . . Applying the material on the interior and exterior of the tube

2256/00 Wires or fibres**2258/00 Small objects (e.g. screws)**

- 2258/02 . The objects being coated one after the other

2259/00 Applying the material to the internal surface of hollow articles other than tubes**2301/00** Inorganic additives or organic salts thereof

- 2301/10 . Phosphates, phosphoric acid or organic salts thereof
- 2301/20 . Chromates, chromic acid or organic salts thereof
- 2301/30 . Acids
- 2301/50 . Bases

Additives other than fillers present in the coating material or in the coating bath**2320/00** Organic additives

- 2320/10 . Detergents

2350/00 Pretreatment of the substrate

- 2350/10 . Phosphatation
- 2350/20 . Chromatation
- 2350/30 . Change of the surface
- 2350/33 . . Roughening
- 2350/35 . . . by chemical means
- 2350/38 . . . by mechanical means
- 2350/40 . . . by adding a porous layer
- 2350/50 . . Smoothing
- 2350/60 . Adding a layer before coating
- 2350/63 . . ceramic layer
- 2350/65 . . metal layer

Pretreatment of the substrates**2400/00** Indexing scheme for single layers or multilayers**2401/00** Form of the coating product, e.g. solution, water dispersion, powders or the like

- 2401/10 . Organic solvent ([B05D 2401/21](#) takes precedence)
- 2401/20 . Aqueous dispersion or solution
- 2401/21 . . Mixture of organic solvent and water
- 2401/30 . the coating being applied in other forms than involving eliminable solvent, diluent or dispersant
- 2401/31 . . applied as mixtures of monomers and polymers
- 2401/32 . . applied as powders
- 2401/33 . . applied as vapours polymerising *in situ*

NOTE

A process should be classified or coded in [B05D 1/60](#) or [B05D 1/62](#)

- 2401/40 . where the carrier is not clearly specified
- 2401/50 . where organic solvent or water can be used as alternative
- 2401/60 . non aqueous inorganic solvent ([B05D 2401/90](#) takes precedence)
- 2401/90 . at least one component of the composition being in supercritical state or close to supercritical state

2420/00 Indexing scheme corresponding to the position of each layer within a multilayer coating relative to the substrate

- 2420/01 . first layer from the substrate side
- 2420/02 . second layer from the substrate side

- 2420/03 . third layer from the substrate side
- 2420/04 . fourth layer from the substrate side
- 2420/05 . fifth layer from the substrate side

2425/00 Indexing scheme corresponding to the position of each layer within a multilayer coating relative to the surface

- 2425/01 . top layer/ last layer, i.e. first layer from the top surface
- 2425/02 . second layer from the top surface
- 2425/03 . third layer from the top surface
- 2425/04 . fourth layer from the top surface
- 2425/05 . fifth layer from the top surface

2430/00 Component used as a filler in the composition**2451/00** Type of carrier, type of coating (Multilayers)**2490/00** Intermixed layers

- 2490/50 . compositions varying with a gradient perpendicular to the surface
- 2490/60 . compositions varying with a gradient parallel to the surface

2500/00 Indexation scheme for the composition of layers**NOTE**

L05D5/**** codes may be combined with one or more codes of the series [B05D 2400/00](#) with a + sign. Example : [B05D 2503/00](#) + [B05D 2420/01](#) + [B05D 2420/02](#)

2501/00 Varnish or unspecified clear coat

- 2501/10 . Wax

Type of polymer or polymer coating**2502/00** Acrylic polymers

- 2502/005 . modified

2503/00 Polyurethanes**2504/00** Epoxy polymers**2505/00** Polyamides

- 2505/50 . Polyimides

2506/00 Halogenated polymers

- 2506/10 . Fluorinated polymers
- 2506/15 . . Polytetrafluoroethylene [PTFE]
- 2506/20 . Chlorinated polymers
- 2506/25 . . PVC ([B05D 2520/10](#) takes precedence)

2507/00 Polyolefins

- 2507/005 . modified
- 2507/01 . Polyethylene
- 2507/015 . . modified
- 2507/02 . Polypropylene
- 2507/025 . . modified

2508/00 Polyesters**2518/00** Other type of polymers

- 2518/10 . Silicon-containing polymers
- 2518/12 . . Ceramic precursors (polysiloxanes, polysilazanes)

2520/00 Water-based dispersions

- 2520/05 . Latex
- 2520/10 . PVC [Plastisol]

2530/00 Rubber or the like**2601/00 Inorganic fillers**

2601/02 . used for pigmentation effect, e.g. metallic effect

2601/04 . . Mica

2601/06 . . . Coated Mica

2601/08 . . Aluminium flakes or platelets

2601/10 . . Other metals

2601/20 . used for non-pigmentation effect

2601/22 . . Silica

2601/24 . . Titanium dioxide, e.g. rutile

2601/26 . . Abrasives

2601/28 . . Metals

2602/00 Organic fillers

2701/00 Coatings being able to withstand changes in the shape of the substrate or to withstand welding

2701/10 . withstanding draw and redraw process, punching

2701/20 . withstanding rolling

2701/30 . withstanding bending

2701/40 . withstanding welding