

CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

SEPARATING; MIXING

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

(NOTE omitted)

B05D PROCESSES FOR APPLYING LIQUIDS OR OTHER FLUENT MATERIALS TO SURFACES, IN GENERAL (apparatus for applying liquids or other fluent materials to surfaces [B05B](#), [B05C](#); {coating of foodstuffs [A23P 20/17](#), [A23P 20/15](#), [A23P 20/18](#)})

NOTES

- 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.
- 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.

1/00	Processes for applying liquids or other fluent materials (B05D 5/00, B05D 7/00 take precedence)	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
1/002	• {the substrate being rotated}	1/265	• • {Extrusion coatings}
1/005	• • {Spin coating}	1/28	• performed by transfer from the surfaces of elements carrying the liquid or other fluent material, e.g. brushes, pads, rollers
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)}		
1/204	• • • • {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		

- 1/62 . {Plasma-deposition of organic layers ([plasma deposition in general C23C 14/00, C23C 16/00](#))}
- 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