

CPC**COOPERATIVE PATENT CLASSIFICATION****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 1/084](#), [A23P 1/085](#)})

NOTE

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.

B05D 1/00

Processes for applying liquids or other fluent materials ([B05D 5/00](#), [B05D 7/00](#) take precedence)

WARNING

[B05D 1/60](#) to [B05D 1/62](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for those groups is as follows- [B05D 1/60](#) to [B05D 1/62](#) : [B05D 1/00](#), [B05D 7/00](#)

- [B05D 1/002](#) . {the substrate being rotated}
- [B05D 1/005](#) .. {Spin coating}
- [B05D 1/007](#) . {using an electrostatic field ([B05D 1/02](#) to [B05D 1/16](#) take precedence)}
- [B05D 1/02](#) . performed by spraying
- [B05D 1/025](#) .. {using gas close to its critical state}
- [B05D 1/04](#) .. involving the use of an electrostatic field {([B05D 1/025](#) and [B05D 1/14](#) take precedence)}
- [B05D 1/045](#) ... {on non-conductive substrates}
- [B05D 1/06](#) ... Applying particulate materials
- [B05D 1/08](#) .. Flame spraying
- [B05D 1/10](#) ... Applying particulate materials
- [B05D 1/12](#) .. Applying particulate materials ([B05D 1/06](#), [B05D 1/10](#) take precedence)
- [B05D 1/14](#) ... Flocking
- [B05D 1/16](#) . Flocking otherwise than by spraying

- B05D 1/18 . performed by dipping
- B05D 1/185 .. {applying monomolecular layers ([B05D 1/204](#) takes precedence)}
- B05D 1/20 .. substances to be applied floating on a fluid
- B05D 1/202 ... {Langmuir Blodgett films ([LB films](#))}
- B05D 1/204 {LB techniques}
- B05D 1/206 {LB troughs}
- B05D 1/208 {After-treatment of monomolecular films}
- B05D 1/22 .. using fluidised-bed technique ([fluidised-bed technique in general B01J 8/24](#))
- B05D 1/24 ... Applying particulate materials

- B05D 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
- B05D 1/265 .. {Extrusion coatings}

- B05D 1/28 . performed by transfer from the surfaces of elements carrying the liquid or other fluent material, e.g. brushes, pads, rollers
- B05D 1/283 .. {Transferring monomolecular layers or solutions of molecules adapted for forming monomolecular layers from carrying elements}
- B05D 1/286 .. {using a temporary backing to which the coating has been applied}

- B05D 1/30 . performed by gravity only, i.e. flow coating
- B05D 1/305 .. {Curtain coating}

- B05D 1/32 . using means for protecting parts of a surface not to be coated, e.g. using stencils, resists
- B05D 1/322 .. {Removable films used as masks}
- B05D 1/325 ... {Masking layer made of peelable film}
- B05D 1/327 ... {Masking layer made of washable film}

- B05D 1/34 . Applying different liquids or other fluent materials simultaneously

- B05D 1/36 . Successively applying liquids or other fluent materials, e.g. without intermediate treatment
- B05D 1/38 .. with intermediate treatment ([intermediate treatment per se B05D 3/00](#))

- B05D 1/40 . Distributing applied liquids or other fluent materials by members moving relatively to surface
- B05D 1/42 .. by non-rotary members

- B05D 1/60 . { Deposition of organic layers from vapour phase ([vapour phase deposition in general C23C 14/00, C23C 16/00](#))}

- B05D 1/62 . { Plasma-deposition of organic layers ([plasma deposition in general C23C 14/00, C23C 16/00](#))}

- B05D 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)

WARNING

[B05D 3/20](#) to [B05D 3/207](#) do not correspond to former or current IPC groups. Concordance CPC : IPC for those groups is as follows-
[B05D 3/20-B05D 3/207](#) : [B05D 3/00](#)

- B05D 3/002 . {Pretreatment}
- B05D 3/005 .. {Pretreatment for allowing a non-conductive substrate to be electrostatically coated}
- B05D 3/007 . {After-treatment}
- B05D 3/02 . by baking {([B05D 3/04](#) takes precedence)}
- B05D 3/0209 .. {Multistage baking}
- B05D 3/0218 .. {Pretreatment, e.g. heating the substrate}
- B05D 3/0227 ... {with IR heaters}
- B05D 3/0236 ... {with ovens ([B05D 3/0227](#) takes precedence)}
- B05D 3/0245 ... {with induction heating}
- B05D 3/0254 .. {After-treatment}
- B05D 3/0263 ... {with IR heaters}
- B05D 3/0272 ... {with ovens}
- B05D 3/0281 ... {with induction heating}
- B05D 3/029 ... {with microwaves}
- B05D 3/04 . by exposure to gases
- B05D 3/0406 .. {the gas being air}
- B05D 3/0413 ... {Heating with air}
- B05D 3/042 ... {Directing or stopping the fluid to be coated with air}
- B05D 3/0426 ... {Cooling with air}
- B05D 3/0433 .. {the gas being a reactive gas}
- B05D 3/044 ... {Pretreatment}
- B05D 3/0446 {of a polymeric substrate}
- B05D 3/0453 ... {After-treatment}
- B05D 3/046 {Curing or evaporating the solvent}
- B05D 3/0466 .. {the gas being a non-reacting gas ([B05D 3/0406](#) takes precedence)}
- B05D 3/0473 ... {for heating, e.g. vapour heating}
- B05D 3/048 ... {for cooling}
- B05D 3/0486 .. {Operating the coating or treatment in a controlled atmosphere}
- B05D 3/0493 .. {using vacuum}
- B05D 3/06 . by exposure to radiation ([B05D 3/02](#) takes precedence; {plasma treatment

- [B05D 3/141](#))
- B05D 3/061 .. {using U.V.}
- B05D 3/062 ... {Pretreatment}
- B05D 3/063 {of polymeric substrates ([B05D 3/064](#) takes precedence)}
- B05D 3/064 {involving also the use of a gas}
- B05D 3/065 ... {After-treatment}
- B05D 3/066 {involving also the use of a gas}
- B05D 3/067 {Curing or cross-linking the coating}
- B05D 3/068 .. {using ionising radiations ([gamma](#), [X](#), [electrons](#))}

- B05D 3/08 . by flames

- B05D 3/10 . by other chemical means
- B05D 3/101 .. {Pretreatment of polymeric substrate}
- B05D 3/102 .. {Pretreatment of metallic substrates ([C23C](#) takes precedence)}
- B05D 3/104 .. {Pretreatment of other substrates}
- B05D 3/105 .. {Intermediate treatments}
- B05D 3/107 .. {Post-treatment of applied coatings}
- B05D 3/108 ... {Curing}

- B05D 3/12 . by mechanical means

- B05D 3/14 . by electrical means
- B05D 3/141 .. {Plasma treatment}
- B05D 3/142 ... {Pretreatment}
- B05D 3/144 {of polymeric substrates}
- B05D 3/145 ... {After-treatment}
- B05D 3/147 {Curing}
- B05D 3/148 {affecting the surface properties of the coating}

- B05D 3/20 . { by magnetic fields}
- B05D 3/203 .. { pre-treatment by magnetic fields}
- B05D 3/207 .. { post-treatment by magnetic fields}

- B05D 5/00** **Processes for applying liquids or other fluent materials to surfaces to obtain special surface effects, finishes or structures**

- B05D 5/005 . {Repairing damaged coatings}

- B05D 5/02 . to obtain a matt or rough surface

- B05D 5/04 . to obtain a surface receptive to ink or other liquid ([B05D 5/02](#), [B41M 5/00J](#) take precedence)

- B05D 5/06 . to obtain multicolour or other optical effects ([B05D 5/02](#) takes precedence)

- B05D 5/061 .. {Special surface effect}
- B05D 5/062 ... {Wrinkled, cracked or ancient-looking effect}
- B05D 5/063 ... {Reflective effect ([B05D 5/067](#) takes precedence)}
- B05D 5/065 .. {having colour interferences or colour shifts or opalescent looking, flip-flop, two tones}
- B05D 5/066 ... {achieved by multilayers}
- B05D 5/067 .. {Metallic effect}
- B05D 5/068 ... {achieved by multilayers ([B05D 5/066](#) takes precedence)}
- B05D 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](#))
- B05D 5/083 .. {involving the use of fluoropolymers}
- B05D 5/086 ... {having an anchoring layer}
- B05D 5/10 .. . to obtain an adhesive surface
- B05D 5/12 .. . to obtain a coating with specific electrical properties
- B05D 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 1/084](#), [A23P 1/085](#))}
- WARNING**
- [B05D 7/50](#) to **B05D 7/53E8E3** do not correspond to former or current IPC groups. Concordance CPC : IPC for those groups is as follows- [B05D 7/50](#) to [B05D 7/5885](#) : [B05D 7/00](#)
- B05D 7/02 .. . to macromolecular substances, e.g. rubber (treatment or coating of shaped articles made of macromolecular substances [C08J 7/00](#))
- B05D 7/04 .. . to surfaces of films or sheets (producing layered products by applying coatings of pasty or pulverulent plastics [B29C 41/00](#))
- B05D 7/06 .. . to wood
- B05D 7/08 ... using synthetic lacquers or varnishes
- B05D 7/10 ... based on cellulose derivatives
- B05D 7/12 .. . to leather (chemical treatment of leather [C14C](#); dyeing leather [D06P](#))
- B05D 7/14 .. . to metal, e.g. car bodies (involving a chemical reaction between the metal and the coating [C23](#))
- B05D 7/142 .. {Auto-deposited coatings, i.e. autophoretic coatings}
- B05D 7/144 ... {After-treatment of auto-deposited coatings}
- B05D 7/146 .. {to metallic pipes or tubes (processes for coating the interior of pipes [B05D 7/222](#))}
- B05D 7/148 .. {using epoxy-polyolefin systems in mono- or multilayers}
- B05D 7/16 .. using synthetic lacquers or varnishes
- B05D 7/18 ... based on cellulose derivatives

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

NOTE

- B05D 7/51 .. { One specific pretreatment, e.g. phosphatation, chromatisation, in combination with one specific coating (pretreatment of metallic substrates C23C; pretreatment before coating in general [B05D 3/00](#))}
- B05D 7/52 .. { Two layers}
- B05D 7/53 ... { Base coat plus clear coat type}
- B05D 7/532 { the two layers being cured or baked together, i.e. wet on wet}
- B05D 7/5323 { the two layers being applied simultaneously}
- B05D 7/534 { the first layer being let to dry at least partially before applying the second layer ([B05D 7/538](#) takes precedence)}
- B05D 7/536 { each layer being cured, at least partially, separately}
- B05D 7/538 { No curing step for the last layer}
- B05D 7/5383 { No curing step for any layer}
- B05D 7/5385 { the two layers being applied simultaneously}
- B05D 7/54 ... { No clear coat specified}
- B05D 7/542 { the two layers being cured or baked together}
- B05D 7/5423 { the two layers being applied simultaneously}
- B05D 7/544 { the first layer is let to dry at least partially before applying the second layer}
- B05D 7/546 { each layer being cured, at least partially, separately}
- B05D 7/548 { No curing step for the last layer}
- B05D 7/5483 { No curing step for any layer}
- B05D 7/5485 { the two layers being applied simultaneously}
- B05D 7/56 .. { Three layers or more}
- B05D 7/57 ... { the last layer being a clear coat}
- B05D 7/572 { all layers being cured or baked together}
- B05D 7/5723 { all layers being applied simultaneously}
- B05D 7/574 { at least some layers being let to dry at least partially before applying the next layer ([B05D 7/577](#) takes precedence)}
- B05D 7/576 { each layer being cured, at least partially, separately}
- B05D 7/577 { some layers being coated "wet-on-wet", the others not}
- B05D 7/578 { No curing step for the last layer}

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

B05D 2201/00 **Polymeric substrate or laminate**

B05D 2201/02	.	Polymeric substrate
B05D 2201/04	.	Laminate
B05D 2201/06	..	Laminate of which the last layer is not a polymer

Substrate

B05D 2202/00 **Metallic substrate**

B05D 2202/10	.	based on Fe
B05D 2202/15	..	Stainless steel
B05D 2202/20	.	based on light metals
B05D 2202/25	..	based on Al
B05D 2202/30	.	based on refractory metals (Ti, V, Cr, Zr, Nb, Mo, Hf, Ta, W)
B05D 2202/35	..	based on Ti
B05D 2202/40	.	based on other transition elements
B05D 2202/45	..	based on Cu

B05D 2203/00 **Other substrates**

B05D 2203/20	.	Wood or similar material
B05D 2203/22	.	Paper or cardboard
B05D 2203/24	.	Leather

- B05D 2203/30 . Other inorganic substrates, e.g. ceramics, silicon
- B05D 2203/35 . . Glass

B05D 2210/00 Applying material to more than three types of substrate materials

B05D 2252/00 Sheets

- B05D 2252/02 . of indefinite length
- B05D 2252/04 . of definite length in a continuous process
- B05D 2252/10 . Applying the material on both sides

Shape of substrate

B05D 2254/00 Tubes

- B05D 2254/02 . Applying the material on the exterior of the tube
- B05D 2254/04 . Applying the material on the interior of the tube
- B05D 2254/06 . . Applying the material on the interior and exterior of the tube

B05D 2256/00 Wires or fibres

B05D 2258/00 Small objects (e.g. screws)

- B05D 2258/02 . The objects being coated one after the other

B05D 2259/00 Applying the material to the internal surface of hollow articles other than tubes

B05D 2301/00 Inorganic additives or organic salts thereof

- B05D 2301/10 . Phosphates, phosphoric acid or organic salts thereof
- B05D 2301/20 . Chromates, chromic acid or organic salts thereof
- B05D 2301/30 . Acids
- B05D 2301/50 . Bases

Additives other than fillers present in the coating material or in the coating bath**B05D 2320/00** **Organic additives**

- B05D 2320/10 . Detergents

B05D 2350/00 **Pretreatment of the substrate**

- B05D 2350/10 . Phosphatation
- B05D 2350/20 . Chromatisation
- B05D 2350/30 . Change of the surface
 - B05D 2350/33 .. Roughening
 - B05D 2350/35 ... by chemical means
 - B05D 2350/38 ... by mechanical means
 - B05D 2350/40 ... by adding a porous layer
 - B05D 2350/50 .. Smoothing
- B05D 2350/60 . Adding a layer before coating
 - B05D 2350/63 .. ceramic layer
 - B05D 2350/65 .. metal layer

Pretreatment of the substrates**B05D 2400/00** **Indexing scheme for single layers or multilayers.****B05D 2401/00** **Form of the coating product, e.g. solution, water dispersion, powders or the like**

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

WARNING**B05D 7/24C or B05D 7/24E**

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

B05D 2420/00 Indexing scheme corresponding to the position of each layer within a multilayer coating relative to the substrate

- B05D 2420/01 . first layer from the substrate side
- B05D 2420/02 . second layer from the substrate side
- B05D 2420/03 . third layer from the substrate side
- B05D 2420/04 . fourth layer from the substrate side
- B05D 2420/05 . fifth layer from the substrate side

B05D 2425/00 Indexing scheme corresponding to the position of each layer within a multilayer coating relative to the surface

- B05D 2425/01 . top layer/ last layer , i.e. first layer from the top surface
- B05D 2425/02 . second layer from the top surface
- B05D 2425/03 . third layer from the top surface
- B05D 2425/04 . fourth layer from the top surface
- B05D 2425/05 . fifth layer from the top surface

B05D 2430/00 Component used as a filler in the composition.**B05D 2451/00 Type of carrier, type of coating (Multilayers)****B05D 2490/00 Intermixed layers**

[B05D 2490/50](#) . compositions varying with a gradient perpendicular to the surface

[B05D 2490/60](#) . compositions varying with a gradient parallel to the surface

[B05D 2500/00](#) Indexation scheme for the composition of layers

NOTE

L05D5**/** codes may be combined with one or more codes of the series
L05D4**/** with a + sign. Example : [B05D 2503/00](#)+[B05D 2420/01](#)+[B05D 2420/02](#)

[B05D 2501/00](#) Varnish or unspecified clear coat

[B05D 2501/10](#) . Wax

Type of polymer or polymer coating

[B05D 2502/00](#) Acrylic polymers

[B05D 2502/005](#) . modified

[B05D 2503/00](#) Polyurethanes

[B05D 2504/00](#) Epoxy polymers

[B05D 2505/00](#) Polyamides

[B05D 2505/50](#) . Polyimides

[B05D 2506/00](#) Halogenated polymers

[B05D 2506/10](#) . Fluorinated polymers

[B05D 2506/15](#) .. Polytetrafluoroethylene [PTFE]

[B05D 2506/20](#) . Chlorinated polymers

[B05D 2506/25](#) .. PVC ([B05D 2520/10](#) takes precedence)

[B05D 2507/00](#) Polyolefins

[B05D 2507/005](#) . modified

- B05D 2507/01
 - . Polyethylene
- B05D 2507/015
 - .. modified
- B05D 2507/02
 - . Polypropylene
- B05D 2507/025
 - .. modified
- B05D 2508/00**
 - Polyesters**
- B05D 2518/00**
 - Other type of polymers**
- B05D 2518/10
 - . Silicon-containing polymers
- B05D 2518/12
 - .. Ceramic precursors (polysiloxanes, polysilazanes)
- B05D 2520/00**
 - Water-based dispersions**
- B05D 2520/05
 - . Latex
- B05D 2520/10
 - . PVC (Plastisol)
- B05D 2530/00**
 - Rubber or the like**
- B05D 2601/00**
 - Inorganic fillers**
- B05D 2601/02
 - . used for pigmentation effect, e.g. metallic effect
- B05D 2601/04
 - .. Mica
- B05D 2601/06
 - ... Coated Mica
- B05D 2601/08
 - .. Aluminium flakes or platelets
- B05D 2601/10
 - .. Other metals
- B05D 2601/20
 - . used for non-pigmentation effect
- B05D 2601/22
 - .. Silica
- B05D 2601/24
 - .. Titanium dioxide, e.g. rutile
- B05D 2601/26
 - .. Abrasives
- B05D 2601/28
 - .. Metals
- B05D 2602/00**
 - Organic fillers**
- B05D 2701/00**
 - Coatings being able to withstand changes in the shape of the substrate or to withstand welding**
- B05D 2701/10
 - . withstanding draw and redraw process, punching

- B05D 2701/20 . withstanding rolling
- B05D 2701/30 . withstanding bending
- B05D 2701/40 . withstanding welding