

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

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](#).

B05D 1/00

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

WARNING

Groups [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

Groups [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 5/52](#)}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

Groups [B05D 7/50](#) to [B05D 7/5885](#) 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

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](#))

- [B05D 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](#))}
- [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 . Chromatation
- 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.

NOTE

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

- 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