

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](#) .

Guidance heading:**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 5/00J](#) } 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

Groups [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

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 }

Guidance heading:**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

Guidance heading: 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

Guidance heading:

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

Guidance heading: 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

Guidance heading:

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

Guidance heading: Additives other than fillers present in the coating material or in the coating bath

B05D 2320/00 **Organic additives**

B05D 2320/10 . Detergents

Guidance heading:

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

Guidance heading: Pretreatment of the substrates

B05D 2400/00 **Indexing scheme for single layers or multilayers.**

Guidance heading:

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

A process should be classified or coded in [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

Guidance heading:

[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](#)

Guidance heading:

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

[B05D 2501/10](#) . Wax

Guidance heading: 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

Guidance heading:

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