

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 . 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.

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