

**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 ( <a href="#">B05D 7/587</a> 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 ( <a href="#">Ti</a> , <a href="#">V</a> , <a href="#">Cr</a> , <a href="#">Zr</a> , <a href="#">Nb</a> , <a href="#">Mo</a> , <a href="#">Hf</a> , <a href="#">Ta</a> , <a href="#">W</a> )
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
<b>B05D 2508/00</b>	<b>Polyesters</b>
<b>B05D 2518/00</b>	<b>Other type of polymers</b>
B05D 2518/10	. Silicon-containing polymers
B05D 2518/12	.. Ceramic precursors ( <a href="#">polysiloxanes</a> , <a href="#">polysilazanes</a> )
<b>B05D 2520/00</b>	<b>Water-based dispersions</b>
B05D 2520/05	. Latex
B05D 2520/10	. PVC (Plastisol)
<b>B05D 2530/00</b>	<b>Rubber or the like</b>
<b>B05D 2601/00</b>	<b>Inorganic fillers</b>
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
<b>B05D 2602/00</b>	<b>Organic fillers</b>

**Guidance heading:**

<b>B05D 2701/00</b>	<b>Coatings being able to withstand changes in the shape of the substrate or to withstand welding</b>
B05D 2701/10	. withstanding draw and redraw process, punching

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