CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

SEPARATING; MIXING

B05 SPRAYING OR ATOMISING IN GENERAL; APPLYING FLUENT MATERIALS TO SURFACES, IN GENERAL

(NOTE omitted)

B05D PROCESSES FOR APPLYING FLUENT MATERIALS TO SURFACES, IN GENERAL

(conveying articles or workpieces through baths of liquid <u>B65G</u>, e.g. <u>B65G 49/02</u>)

NOTES

- 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.

almost in contact with, the surface

2. Attention is drawn to the Note following the title of class <u>B05</u>.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00	Processes for applying liquids or other fluent	1/265	• • {Extrusion coatings}
	materials (B05D 5/00, B05D 7/00 take precedence)	1/28	 performed by transfer from the surfaces of elements
1/002	• {the substrate being rotated}		carrying the liquid or other fluent material, e.g.
1/005	• • {Spin coating}		brushes, pads, rollers
1/007	• {using an electrostatic field (B05D 1/02 - B05D 1/16 take precedence)}	1/283	• • {Transferring monomolecular layers or solutions of molecules adapted for forming monomolecular
1/02	 performed by spraying 		layers from carrying elements}
1/025	• • {using gas close to its critical state}	1/286	• • {using a temporary backing to which the coating
1/04	involving the use of an electrostatic field		has been applied}
	$\{(B05D \ 1/025 \ and \ B05D \ 1/14 \ take \ precedence)\}$	1/30	 performed by gravity only, i.e. flow coating
1/045	• • {on non-conductive substrates}	1/305	• • {Curtain coating}
1/06	Applying particulate materials	1/32	 using means for protecting parts of a surface not to
1/08	Flame spraying		be coated, e.g. using stencils, resists
1/10	Applying particulate materials	1/322	{Removable films used as masks}
1/12	• Applying particulate materials (<u>B05D 1/06</u> ,	1/325	• • • {Masking layer made of peelable film}
	B05D 1/10 take precedence)	1/327	• • • {Masking layer made of washable film}
1/14	Flocking	1/34	 Applying different liquids or other fluent materials
1/16	 Flocking otherwise than by spraying 		simultaneously
1/18	 performed by dipping 	1/36	 Successively applying liquids or other fluent
1/185	• • {applying monomolecular layers (<u>B05D 1/204</u>		materials, e.g. without intermediate treatment
	takes precedence)}	1/38	 with intermediate treatment (intermediate treatment per se B05D 3/00)
1/20	 substances to be applied floating on a fluid 	1/40	 Distributing applied liquids or other fluent materials
1/202	• • • {Langmuir Blodgett films (LB films)}	1/40	by members moving relatively to surface
1/204	{LB techniques}	1/42	 by non-rotary members
1/206	{LB troughs}	1/42	Deposition of organic layers from vapour phase
1/208	• • • • {After-treatment of monomolecular films}	1/00	(vapour phase deposition in general <u>C23C 14/00</u> ,
1/22	 using fluidised-bed technique (fluidised-bed 		(vapour phase deposition in general <u>e23C 14/00</u> , <u>C23C 16/00</u>)}
	technique in general <u>B01J 8/24</u>)	1/62	• {Plasma-deposition of organic layers (plasma
1/24	Applying particulate materials	1/02	deposition in general C23C 14/00, C23C 16/00)}
1/26	 performed by applying the liquid or other fluent 		======================================
	material from an outlet device in contact with, or		

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other fluent materials are to be applied; After- treatment of applied coatings, e.g., intermediate treating of an applied coatings, e.g., intermediate treating of an applied coating preparatory to subsequent applications of liquids or other fluent materials (outcessively applying liquids or other fluent materials (outcessively applying liquids or other fluent materials (outcessively applying liquids) or other fluent materials (outcessively applying liquids) or other fluent materials (outcessively applying liquids) or other fluent substrate to be electrostatically coated) 3002	3/00	Pretreatment of surfaces to which liquids or	3/141	• • {Plasma treatment}
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precedence { plasma treatment B05D 3/141}) 3/061 . {using U.V.} 3/062 . {Pretreatment} 3/063 {of polymeric substrates (B05D 3/064 takes precedence)} 3/064 {involving also the use of a gas} 3/065 {After-treatment} 3/066 {tinvolving also the use of a gas} 3/067 {Curing or cross-linking the coating} 3/088 . {using ionising radiations (gamma, X, electrons)} 3/101 . {Pretreatment of polymeric substrates} 3/102 . {Pretreatment of other substrates} 3/103 {Pretreatment of other substrates} 3/104 . {Pretreatment of other substrates} 3/105 . {Intermediate treatments} 3/106 {Curing} 3/107 . {Post-treatment of applied coatings} 3/108 {Curing} 3/108 {Curing} 3/108 {Curing} 3/109 {Post-treatment of applied coatings} 3/109 {Post-treatment of applied coatings} 3/109 {Curing} 3/100 {Post-treatment of applied coatings} 3/101 {Post-treatment of applied coatings} 3/102 {Intermediate treatments} 3/103 {Curing} 3/104 {Post-treatment of applied coatings} 3/105 {Intermediate treatments} 3/106 {Curing} 3/107 {Post-treatment of applied coatings} 3/108 {Curing} 3/109 {Curing} 3/109 {Curing} 3/100 .				
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3/062 {Pretreatment} 3/063 {Or polymeric substrates (B05D 3/064 takes precedence)} 3/064 {involving also the use of a gas} 3/065 {After-treatment} 3/066 {involving also the use of a gas} 3/067 {Curing or cross-linking the coating} 3/088 . {using ionising radiations (gamma, X, electrons)} 3/101 . {Pretreatment of polymeric substrates} 3/102 . {Pretreatment of metallic substrates (C23C takes precedence)} 3/104 . {Pretreatment of other substrates} 3/105 . {Intermediate treatment of applied coatings} 3/107 . {Post-treatment of applied coatings} 3/108 {Curing} 3/109 {Curing} 3/100 {Pretreatment of applied coatings} 3/101 . {Pretreatment of other substrates} 3/102 . {Pretreatment of other substrates} 3/103 {Pretreatment of other substrates} 3/104 . {Pretreatment of applied coatings} 3/105 . {Intermediate treatment of applied coatings} 3/106 {Curing} 3/107 . {Post-treatment of applied coatings} 3/108 {Curing} 3/109	2/0.44	· · · · · · · · · · · · · · · · · · ·	7/02	
3/063 {of polymeric substrates (B05D 3/064 takes precedence)} 3/064 {of polymeric substrates (B05D 3/064 takes precedence)} 3/065 {After-treatment} 3/066 {involving also the use of a gas} 3/067 {Curing or cross-linking the coating} 3/068 {using ionising radiations (gamma, X, electrons)} 3/08 . by flames 3/10 . by other chemical means 3/10 {Pretreatment of polymeric substrate} 3/102 {Pretreatment of metallic substrates} 3/104 {Pretreatment of other substrates} 3/105 . {Intermediate treatments} 3/106 {Pretreatment of applied coatings} 3/107 {Post-treatment of applied coatings} 3/108 {Curing} 3/108 {Curing} 3/109 {Post-treatment of applied coatings} 3/109 {Curing} 3/109 {C		· • ·	7702	
3/063 { or polyment substrates (BDD 5/064 takes precedence) } 3/064 { involving also the use of a gas } 3/065 { After-treatment } 3/066 { Involving also the use of a gas } 3/067 { Curing or cross-linking the coating } 3/068 { using ionising radiations (gamma, X, electrons) } 3/08 . by flames 3/10 . by other chemical means 3/10 { Pretreatment of polymeric substrate } 3/10 { Pretreatment of metallic substrates (C23C takes precedence) } 3/104 { Pretreatment of other substrates } 3/105 { Intermediate treatments } 3/107 { Post-treatment of applied coatings } 3/108 { Curing } 3/109 { Pretreatment of applied coatings } 3/1010 { Pretreatment of applied coatings } 3/102 { Pretreatment of other substrates } 3/103 { Intermediate treatments } 3/104 { Pretreatment of other substrates } 3/105 { Intermediate treatment of applied coatings } 3/107 { Post-treatment of applied coatings } 3/108 { Curing } 3/108 { Curing } 3/109 { Suring epoxy-polyolefin systems in mono- or multilayers }				
3/064 {involving also the use of a gas} 3/065 {After-treatment} 3/066 {involving also the use of a gas} 3/067 {Curing or cross-linking the coating} 3/068 {using synthetic lacquers or varnishes} 3/08 . {using ionising radiations (gamma, X, electrons)} 3/10 . by other chemical means 3/10 . {Pretreatment of polymeric substrate} 3/10 . {Pretreatment of metallic substrates (C23C takes precedence)} 3/10 . {Pretreatment of other substrates} 3/10 . {Intermediate treatments} 3/10 . {Post-treatment of applied coatings} 3/10 . {Using epoxy-polyolefin systems in mono- or multilayers}	3/063		7/04	
3/065 {After-treatment} 3/066 {involving also the use of a gas} 3/066 {involving also the use of a gas} 3/067 {Curing or cross-linking the coating} 3/068 {using ionising radiations (gamma, X, electrons)} 3/08 . by flames 3/10 . by other chemical means 3/10 {Pretreatment of polymeric substrate} 3/10 {Pretreatment of metallic substrates} 3/10 {Pretreatment of metallic substrates} 3/10 {Pretreatment of other sub	0.10 - :		7/07	
3/066 {Arter-treatment} 3/066 {Involving also the use of a gas} 3/067 {Curing or cross-linking the coating} 3/068 {using ionising radiations (gamma, X, electrons)} 3/08 . by flames 3/10 . by other chemical means 3/10 {Pretreatment of polymeric substrate} 3/102 {Pretreatment of metallic substrates (C23C takes precedence)} 3/104 {Pretreatment of other substrates} 3/105 {Intermediate treatments} 3/107 {Post-treatment of applied coatings} 3/108 {Curing} 3/109 {Curin	3/064			
3/066 {Involving also the use of a gas} 3/067 {Curing or cross-linking the coating} 3/068 {using ionising radiations (gamma, X, electrons)} 3/08 . by flames 3/10 . by other chemical means 3/10 {Pretreatment of polymeric substrate} 3/102 {Pretreatment of metallic substrates (C23C takes precedence)} 3/104 {Pretreatment of other substrates} 3/105 . {Intermediate treatments} 3/107 . {Post-treatment of applied coatings} 3/108 {Curing} 3/108 {Curing} 3/109 {Curing}			7/06	
3/068 . {using ionising radiations (gamma, X, electrons)} 3/08 . by flames 3/10 . by other chemical means 3/10 . {Pretreatment of polymeric substrate} 3/10 . {Pretreatment of metallic substrates (C23C takes precedence)} 3/104 . {Pretreatment of other substrates} 3/105 . {Intermediate treatments} 3/107 . {Post-treatment of applied coatings} 3/108 {Curing} 3/109 {Using epoxy-polyolefin systems in mono- or multilayers}	3/066			
3/08 . {using ionising radiations (gamma, X, electrons)} 3/08 . by flames 3/10 . by other chemical means 3/101 . {Pretreatment of polymeric substrate} 3/102 . {Pretreatment of metallic substrates (C23C takes precedence)} 3/104 . {Pretreatment of other substrates} 3/105 . {Intermediate treatments} 3/107 . {Post-treatment of applied coatings} 3/108 {Curing} 3/108 {Curing} 3/109 {Using epoxy-polyolefin systems in mono- or multilayers}	3/067			
3/10 by other chemical means 3/10	3/068	• • {using ionising radiations (gamma, X, electrons)}		
3/10 by other chemical means 3/101 • {Pretreatment of polymeric substrate} 3/102 • {Pretreatment of metallic substrates (C23C takes precedence)} 3/104 • {Pretreatment of other substrates} 3/105 • {Intermediate treatments} 3/107 • {Post-treatment of applied coatings} 3/108 • • {Curing} 3/108 • • {Curing} 3/109 • by other chemical means 7/14 • to metal, e.g. car bodies (involving a chemical reaction between the metal and the coating C23) - • {Auto-deposited coatings, i.e. autophoretic coatings} - • • {After-treatment of auto-deposited coatings} - • • {to metallic pipes or tubes (processes for coating the interior of pipes B05D 7/222)} - • • * * * * * * * * * * * * * * * * *	3/08	• by flames	7/12	
3/101 . {Pretreatment of polymeric substrate} 3/102 . {Pretreatment of metallic substrates (C23C takes precedence)} 3/104 . {Pretreatment of other substrates} 3/105 . {Intermediate treatments} 3/107 . {Post-treatment of applied coatings} 3/108 {Curing} 3/108 {Curing} 3/109 {Curing} 3/109 {Curing} 3/100	3/10	 by other chemical means 	7/14	
3/102 . {Pretreatment of metallic substrates (C23C takes precedence)} 3/104 . {Pretreatment of other substrates} 3/105 . {Intermediate treatments} 3/107 . {Post-treatment of applied coatings} 3/108 {Curing} 3/109	3/101	• • {Pretreatment of polymeric substrate}	// 1-	
3/104 · {Pretreatment of other substrates} 7/144 · . {After-treatment of auto-deposited coatings} 3/105 · {Intermediate treatments} 7/146 · . {After-treatment of auto-deposited coatings} 3/107 · {Post-treatment of applied coatings} 7/146 · . {to metallic pipes or tubes (processes for coating the interior of pipes B05D 7/222)} 3/108 · {Curing} 7/148 · . {using epoxy-polyolefin systems in mono- or multilayers}	3/102		7/142	
3/104 . {Pretreatment of other substrates} 3/105 . {Intermediate treatments} 3/107 . {Post-treatment of applied coatings} 3/108 {Curing} 3/12 . by mechanical means 7/144 {After-treatment of auto-deposited coatings} 7/146 {to metallic pipes or tubes (processes for coating the interior of pipes B05D 7/222)} 7/148 {using epoxy-polyolefin systems in mono- or multilayers}			//172	
3/105 . {Intermediate treatments} 3/107 . {Post-treatment of applied coatings} 3/108 {Curing} 3/12 . by mechanical means 7/146 . {to metallic pipes or tubes (processes for coating the interior of pipes B05D 7/222)} 7/148 . {using epoxy-polyolefin systems in mono- or multilayers}			7/144	- ·
3/107 . {Post-treatment of applied coatings} 3/108 {Curing} 3/12 . by mechanical means the interior of pipes B05D 7/222)} (using epoxy-polyolefin systems in mono- or multilayers}				
3/108 {Curing} 7/148 {using epoxy-polyolefin systems in mono- or multilayers}		**		
3/12 • by mechanical means multilayers}		· · · · · · · · · · · · · · · · · · ·	7/148	
3/14 . by electrical means 7/16 using synthetic lacquers or varnishes	3/12			
		-		multilayers}

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7/10	hand an allulan desiration	7/570	(N
7/18	• • based on cellulose derivatives	7/578	• • • {No curing step for the last layer}
7/20	• to wires (for insulating electric cables <u>H01B 13/16</u>)	7/5783	{No curing step for any layer}
7/22	• to internal surfaces, e.g. of tubes	7/5785	{all layers being applied
7/222	• • {of pipes}		simultaneously}
7/225	• • • {Coating inside the pipe}	7/58	{No clear coat specified}
7/227	• • {of containers, cans or the like}	7/582	• • • {all layers being cured or baked together}
7/24	 for applying particular liquids or other fluent 	7/5823	• • • • {all layers being applied simultaneously}
	materials	7/584	• • • {at least some layers being let to dry, at
7/26	• synthetic lacquers or varnishes (<u>B05D 7/08</u> , <u>B05D 7/16</u> take precedence)		least partially, before applying the next layer (B05D 7/587 takes precedence)}
7/50	• {Multilayers}	7/586	• • • { each layer being cured, at least partially, separately }
	<u>NOTE</u>	7/587	• • • { some layers being coated "wet-on-wet", the
	A possible inorganic pretreatment or coating	77307	others not}
	on the substrate such as chromatation,	7/588	{No curing step for the last layer}
	phosphatation, plating, is not counted as a	7/5883	{No curing step for any layer}
	layer. This group <u>covers</u> mostly multilayers	7/5885	{all layers being applied
	characterised by each layer and the succession of them (laminates in general <u>B32B</u>)	1/3663	simultaneously}
		2201/00	Polymeric substrate or laminate
7/51	• • {One specific pretreatment, e.g. phosphatation,	2201/00	Polymeric substrate
	chromatation, in combination with one specific	2201/02	Laminate
	coating (pretreatment of metallic substrates		
	<pre>C23C; pretreatment before coating in general B05D 3/00)}</pre>	2201/06	. Laminate of which the last layer is not a polymer
7/52	{Two layers}	Substrate	
7/53	• • • {Base coat plus clear coat type}	2202/00	Metallic substrate
7/532	{the two layers being cured or baked	2202/10	based on Fe
	together, i.e. wet on wet}	2202/15	Stainless steel
7/5323	• • • • {the two layers being applied	2202/20	based on light metals
	simultaneously }	2202/25	based on Al
7/534	• • • { the first layer being let to dry at least	2202/30	 based on refractory metals (Ti, V, Cr, Zr, Nb, Mo,
	partially before applying the second layer	2202/30	Hf, Ta, W)
	$(B05D 7/538 $ takes precedence)}	2202/35	based on Ti
7/536	• • • { each layer being cured, at least partially,	2202/40	based on other transition elements
	separately }	2202/45	based on Cu
7/538	• • • { No curing step for the last layer }	2202/43	based on Cu
7/5383	• • • • {No curing step for any layer}	2203/00	Other substrates
7/5385	• • • • • {the two layers being applied	2203/20	Wood or similar material
	simultaneously}	2203/22	Paper or cardboard
7/54	{No clear coat specified}	2203/24	. Leather
7/542	• • • { the two layers being cured or baked	2203/30	Other inorganic substrates, e.g. ceramics, silicon
	together}	2203/35	Glass
7/5423	• • • • {the two layers being applied		
	simultaneously}	2210/00	Applying material to more than three types of
7/544	(the first layer is let to dry at least partially		substrate materials
7/546	before applying the second layer} {each layer being cured, at least partially,	-	
	separately}	2252/00	Cl 4
7/548	• • • • {No curing step for the last layer}	2252/00	Sheets
7/5483	{No curing step for any layer}	2252/02	• of indefinite length
7/5485	{the two layers being applied	2252/04	• of definite length in a continuous process
775405	simultaneously}	2252/10	Applying the material on both sides
7/56	{Three layers or more}	Chana of au	actuata
7/57	• • {the last layer being a clear coat}	Shape of sub	<u>istrate</u>
7/572	{all layers being cured or baked together}	2254/00	Tubes
7/5723	{all layers being applied simultaneously}	2254/02	Applying the material on the exterior of the tube
7/574	• • • {all layers being applied simultaneously} • • • • {at least some layers being let to dry at	2254/04	• Applying the material on the interior of the tube
1/3/4	least partially before applying the next layer	2254/06	Applying the material on the interior and exterior
	(<u>B05D 7/577</u> takes precedence)}		of the tube
7/576			
7/576	• • • { each layer being cured, at least partially, separately }	2256/00	Wires or fibres
7/577	• • • • {some layers being coated "wet-on-wet", the	2258/00	Small objects (e.g. screws)
,	others not}	2258/02	The objects being coated one after the other

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B05D Shape of substrate

Applying the material to the internal surface of . third layer from the substrate side hollow articles other than tubes . fourth layer from the substrate side 2420/05 . fifth layer from the substrate side 2425/00 Indexing scheme corresponding to the position of 2301/00 Inorganic additives or organic salts thereof each layer within a multilayer coating relative to the surface 2301/10 . Phosphates, phosphoric acid or organic salts thereof 2425/01 . top layer/ last layer, i.e. first layer from the top 2301/20 Chromates, chromic acid or organic salts thereof surface . Acids 2301/30 2425/02 second layer from the top surface 2301/50 . Bases 2425/03 third layer from the top surface Additives other than fillers present in the coating material or in 2425/04 fourth layer from the top surface the coating bath 2425/05 fifth layer from the top surface 2320/00 Organic additives 2430/00 Component used as a filler in the composition 2320/10 . Detergents 2451/00 Type of carrier, type of coating (Multilayers) 2490/00 **Intermixed layers** 2490/50 compositions varying with a gradient perpendicular 2350/00 Pretreatment of the substrate to the surface 2350/10 . Phosphatation 2490/60 compositions varying with a gradient parallel to the 2350/20 Chromatation surface 2350/30 Change of the surface 2350/33 Roughening 2500/00 Indexation scheme for the composition of layers 2350/35 by chemical means NOTE by mechanical means 2350/38 L05D5**/** codes may be combined with one or by adding a porous layer 2350/40 more codes of the series B05D 2400/00 with a + 2350/50 Smoothing sign. Example : <u>B05D 2503/00</u> + <u>B05D 2420/01</u> + 2350/60 . Adding a layer before coating B05D 2420/02 2350/63 . ceramic layer 2350/65 . . metal layer Varnish or unspecified clear coat 2501/10 . Wax Pretreatment of the substrates Type of polymer or polymer coating Indexing scheme for single layers or multilayers 2502/00 Acrylic polymers 2502/005 . modified 2401/00 Form of the coating product, e.g. solution, water 2503/00 **Polyurethanes** dispersion, powders or the like 2504/00 **Epoxy polymers** 2401/10 • Organic solvent (<u>B05D 2401/21</u> takes precedence) Aqueous dispersion or solution 2401/20 2505/00 **Polyamides** Mixture of organic solvent and water 2401/21 2505/50 . Polyimides 2401/30 • the coating being applied in other forms than 2506/00 Halogenated polymers involving eliminable solvent, diluent or dispersant 2506/10 . Fluorinated polymers . . applied as mixtures of monomers and polymers 2401/31 2506/15 . . Polytetrafluoroethylene [PTFE] 2401/32 . . applied as powders . Chlorinated polymers 2506/20 . . applied as vapours polymerising in situ 2401/33 2506/25 PVC (B05D 2520/10 takes precedence) 2507/00 **Polyolefins** A process should be classified or coded in 2507/005 . modified B05D 1/60 or B05D 1/62 2507/01 . Polyethylene 2401/40 where the carrier is not clearly specified 2507/015 . . modified 2401/50 where organic solvent or water can be used as 2507/02 . Polypropylene alternative . . modified 2507/025 non aqueous inorganic solvent (B05D 2401/90 takes 2401/60 2508/00 **Polyesters** precedence) 2401/90 at least one component of the composition being in 2518/00 Other type of polymers supercritical state or close to supercritical state 2518/10 . Silicon-containing polymers 2420/00 Indexing scheme corresponding to the position of 2518/12 . Ceramic precursors (polysiloxanes, polysilazanes) each layer within a multilayer coating relative to 2520/00 Water-based dispersions

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2520/05

2520/10

. Latex

PVC [Plastisol]

the substrate

. first layer from the substrate side

second layer from the substrate side

2420/01

2420/02

2530/00	Rubber or the like
2601/00	Inorganic fillers
2601/02	• used for pigmentation effect, e.g. metallic effect
2601/04	Mica
2601/06	Coated Mica
2601/08	Aluminium flakes or platelets
2601/10	Other metals
2601/20	• used for non-pigmentation effect
2601/22	Silica
2601/24	Titanium dioxide, e.g. rutile
2601/26	Abrasives
2601/28	Metals
2602/00	Organic fillers

2701/00	Coatings being able to withstand changes in the shape of the substrate or to withstand welding
2701/10	• withstanding draw and redraw process, punching
2701/20	 withstanding rolling
2701/30	 withstanding bending
2701/40	withstanding welding

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