

CPC COOPERATIVE PATENT CLASSIFICATION

D TEXTILES; PAPER

PAPER

D21 PAPER-MAKING; PRODUCTION OF CELLULOSE

D21H PULP COMPOSITIONS; PREPARATION THEREOF NOT COVERED BY SUBCLASSES [D21C](#) OR [D21D](#); IMPREGNATING OR COATING OF PAPER; TREATMENT OF FINISHED PAPER NOT COVERED BY CLASS [B31](#) OR SUBCLASS [D21G](#); PAPER NOT OTHERWISE PROVIDED FOR

NOTES

1. This subclass covers also pulp compositions for the preparation of fibreboard or other fibrous articles by wet processes.
2. In this subclass, the following terms are used with the meaning indicated:
 - "pulp" means a dispersion, { e.g. an aqueous suspension, } comprising paper-making fibres and optional additives, which is to be processed, and covers the term "stock"; it also means dry paper-making fibres which are to be made into paper by either wet or dry processes;
 - "paper" means paper, cardboard or wet-laid non-woven fabrics.
3. In groups [D21H 11/00](#) - [D21H 15/00](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.

WARNINGS

1. The following IPC group is not in the CPC scheme. The subject matter for this IPC group is classified in the following CPC group:
[D21H 27/12](#) covered by [D21H 27/00](#), [H01B 3/52](#)
2. 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.

IPC4 groups

1/00 **{Paper; Cardboard (fibreboard [D21J](#))}**

NOTE

Layered products classified in this group are also classified in subclass [B32B](#)

- 1/02 . {Multi-ply material finished plies}
- 1/04 . . {by using an adhesive}
- 1/06 . . {Apparatus}
- 1/08 . . {with incorporated laminae of threads or fabric}

3/00 **{Paper or cardboard prepared by adding substances to the pulp or to the formed web on the paper-making machine and by applying substances to finished paper or cardboard (on the paper-making machine), also when the intention is to impregnate at least a part of the paper body}**

NOTE

A compound is always classified in the last appropriate place.

- 3/82 . {by adding insoluble coloured substances, e.g. powders, fibres, pieces of metal, for obtaining different colours in the paper fancy papers; substances characterised by their physical appearance, e.g. form, rather than by their chemical constitution}

3/825 . . {substances having a characteristic form, e.g. powders, disintegrated resin foams}

5/00 **{Special paper or cardboard not otherwise provided for (duplicating or recording paper [B41M](#))}**

- 5/0002 . {Flame-resistant papers; (complex) compositions rendering paper fire-resistant}
- 5/0005 . {Processes or apparatus specially adapted for applying liquids or other fluent materials to finished paper or board, e.g. impregnating, coating (applying liquids to surfaces in general [B05](#); treating textile materials by liquids, gases or vapours [D06B](#); impregnated or coated fibreboard [D21J 1/08](#); apparatus for making patterned paper [D21H 5/06](#); printing machines [B41F](#))}

NOTE

Equipment related to specific chemical treatment, see relevant sub-groups for this treatment; e.g. parchmmentising or vulcanising [D21H 5/08](#), treatment with viscose [D21H 17/25](#)

- 5/0007 . . {Pretreatment of paper to which liquids or other fluent materials are to be applied}
- 5/001 . . {by treating paper or board in discontinuous form, e.g. separate sheets, blanks, paper rolls, or the like}
- 5/0012 . . {by bringing paper into contact with an excess of fluids, the paper carrying away only a part of the fluid material, e.g. by passing through liquids, gases or vapours}

- 5/0015 . . . {only one side of the paper being in contact with the treating medium, e.g. paper carried by support}
- 5/0017 {Trailing blade coaters, e.g. blade engaging paper and forming bottom wall of reservoir}
- 5/002 . . . {the paper being at least partly surrounded by treating medium on both sides}
- 5/0022 {treating medium being a gas or vapour}
- 5/0025 . . {by contact with a device carrying the treating material ([C12](#) take precedence)}
- 5/0027 . . . {by a rubbing device, e.g. with brushes or pads}
- 5/003 . . . {with a roller}
- 5/0032 {Details thereof, e.g. surface characteristics, peripheral speed}
- 5/0035 {the coating material on the applicator roller being subjected to a particular treatment before applying to paper}
- 5/0037 {Reverse roll coating, e.g. applicator surface moving in direction opposite to that of paper}
- 5/004 . . . {the treating material being non-fluent at the moment of transfer, e.g. in form of preformed, at least partially hardened, coating}
- 5/0042 . . {by pouring or allowing to flow in a continuous stream onto the surface, the entire stream being carried away by the paper}
- 5/0045 . . . {Falling curtain method}
- 5/0047 . . {by spraying or projecting ([D21H 5/0022](#) takes precedence)}
- 5/005 . . {involving several different techniques of application (treatments in which the characteristics of a single treatment are of interest only, or in which all treatments have characteristics provided for in a single sub-group, see the relevant sub-groups for the single treatment; several superposed coatings [D21H 19/82](#); apparatus for making multi-ply material [D21H 1/06](#))}
- 5/0052 . . . {Plural serial stages}
- 5/0055 . . . {Plural parallel stages}
- 5/0057 . . . {Apparatus permitting switching from one technique to another}
- 5/006 . . {Controlling or regulating ([controlling or regulating in general G05](#))}
- 5/0062 . . . {Regulating the amount or the distribution, e.g. smoothing, of essentially fluent material already applied to the paper; Recirculating excess coating material applied to paper ([after-treatment D21H 25/00 - D21H 25/18](#))}
- 5/0065 {with blades ([trailing blade D21H 5/0017](#))}
- 5/0067 {with an essentially cylindrical body, e.g. roll or rod}
- 5/007 {with a blast of gas or vapour, e.g. air knife}
- 5/0072 . {Anti-slip papers}
- 5/0075 . {Anti-friction, anti-abrasive or release paper (processes for obtaining an anti-friction or anti-adhesive surface [B05D 5/08](#); adhesive materials on paper characterised by the release coating composition [C09J 7/21](#))}
- 5/0077 . {Transparent papers, e.g. paper treated with transparent-rendering compositions or glassine paper prepares from well-hydrated stock (paper with watermarks [B41M 3/10](#); watermaking devices [D21F 1/44](#))}
- 5/008 . . {characterised by the use of special fibrous materials as well as special compounds (use of special fibrous materials [D21H 5/12](#); adding substances to the pulp or to the formed web [D21H 3/00](#))}
- 5/0082 . . {Wall papers (printed wallpapers [B41M 3/18](#); pregummed wall paper [C09J 7/21](#))}
- 5/0085 . . {Paper for surface-protection and decorative purposes, e.g. pressure laminates (wall paper [D21H 5/0082](#); multi-ply material [D21H 1/02](#))}
- 5/0087 . . {Aspect concerning the core layer(s)}
- 5/009 . . {Aspect concerning the anchor layer(s)}
- 5/0092 . . {Post-treated paper (after-treatment following application of substances to finished paper [D21H 25/00 - D21H 25/18](#), [D21H 5/0062](#); after-treatment of printed works [B41M 7/00](#); working paper [B31E](#); paper from fibres which can be modified [D21H 5/1272](#))}
- 5/0095 . . {with means capable of destructing or weakening the paper structure, e.g. cellulose decomposing agents ([working-up waste paper D21C 5/02](#))}
- 5/0097 . . {with means restoring or reinforcing the paper-structure ([preserving paintings B44D 7/00](#); multi-ply material with incorporated laminae of threads or fabric [D21H 1/08](#))}
- 5/02 . . {Patterned paper}
- 5/025 . . {Webs provided with apertures}
- 5/04 . . {marbled}
- 5/06 . . {Apparatus}
- 5/08 . . {Vegetable parchment}
- 5/12 . . {characterised by the use of special fibrous materials ([felts or other non-woven fabrics D04](#))}
- 5/1209 . . {of protein fibres}
- 5/1218 . . {of crimped or crimpable fibres}
- 5/1227 . . {of polysaccharide fibres other than cellulosic, e.g. alginic fibres}
- 5/1236 . . {of fibres which have been treated to render them suitable for sheet formation, e.g. fibrillatable fibres}
- 5/1245 . . {of long or continuous filaments}
- 5/1254 . . {of fibres which have been treated to improve their dispersion in the paper-making furnish}
- 5/1263 . . {of fibres which have been swollen}
- 5/1272 . . {of fibres which can be physically or chemically modified during or after web formation ([after treatment of coated or impregnated papers D21H 25/00 - D21H 25/18](#))}
- 5/1281 . . . {by chemical treatment}
- 5/129 . . . {by thermal treatment}
- 5/14 . . {of cellulose fibres only}
- 5/141 . . . {of fibrous cellulose derivatives}
- 5/143 {grafted or encapsulated cellulose}
- 5/145 {cellulose esters}
- 5/146 {cellulose acetate}
- 5/148 . . . {viscose}
- 5/16 . . . {Tobacco or cigarette paper}
- 5/18 . . {of inorganic fibres with or without cellulose fibres}
- 5/183 . . . {of asbestos fibres}
- 5/186 . . . {of mica fibres or flakes}
- 5/20 . . {of organic non-cellulosic fibres too short for spinning, with or without cellulose fibres}
- 5/202 . . . {polyolefins}
- 5/205 . . . {acrylic fibres}

5/207	. . . {polyester fibres}	11/04	. . Kraft or sulfate pulp
5/22	. {Fungicidal, bactericidal, insecticidal, disinfecting, antiseptic, or corrosion-inhibiting paper antistatic, antioxygenic paper (toilet paper A47K 10/16)}	11/06	. . Sulfite or bisulfite pulp
5/24	. {having enhanced flexibility or extensibility produced by mechanical treatment of the unfinished paper (crêping paper B31F 1/12 ; making patterned paper D21F 11/006 , apertured paper D21F 11/008)}	11/08	. Mechanical or thermomechanical pulp
5/245	. . {obtained by compressing the (moist) paper in directions lying in, and optionally perpendicular to, the paper plane, e.g. plain-surfaced Clupak papers}	11/10	. Mixtures of chemical and mechanical pulp
5/26	. {Special paper or cardboard manufactured by dry method; Apparatus or processes for forming webs by dry method from mainly short-fibre or particle material, e.g. paper pulp (making board from wood, e.g. lignocellulosic, particles or fibres B27N 1/00 and subgroups; making non-woven fabrics from textile fibres D04H 1/72 ; machines for forming diapers A61F 13/15585 ; lap-forming devices in preliminary treatment of fibres, e.g. for spinning D01G 25/00)}	11/12	. Pulp from non-woody plants or crops, e.g. cotton, flax, straw, bagasse
5/2607	. . {Pretreatment and individualisation of the fibres, formation of the mixture fibres-gas and laying the fibres on a forming surface (manufacture of a pulp sheet or dewatered pulp D21C 9/185)}	11/14	. Secondary fibres (working-up waste paper D21C 5/02)
5/2614	. . . {Detachment of the fibres from their compressed state, e.g. by disintegration of a pulpboard (mechanical treatment of fibrous raw materials by dry methods D21B 1/06)}	11/16	. modified by a particular after-treatment
5/2621	. . . {Distribution of the fibres in the gas stream and on the forming surface}	11/18	. . Highly hydrated, swollen or fibrillatable fibres
5/2628	. . . {Formation of a product from several constituents, e.g. blends of various types of fibres, fillers and/or binders or formation from various sources and/or streams or fibres (mixing non-fibrous materials with fibres as a preliminary treatment of fibres, e.g. for spinning D01G 13/00)}	11/20	. . Chemically or biochemically modified fibres
5/2635	. . . . {forming a final homogeneous product}	11/22	. . . cationised
5/2642	. . . . {forming a final non-homogeneous product}	13/00	Pulp or paper, comprising synthetic cellulose or non-cellulose fibres or web-forming material (chemical features in the manufacture of artificial fibres D01F)
5/265	. . {Treatment of the formed web}	13/02	. Synthetic cellulose fibres
5/2657	. . . {Consolidation}	13/04	. . Cellulose ethers
5/2664	. . . . {Addition of a binder, e.g. synthetic resins or water}	13/06	. . Cellulose esters
5/2671	. . . . {Compression of the web, optionally with the use of a binder}	13/08	. . from regenerated cellulose
5/2678	. . {Manufacture of layered products (assembly of superposed sheets), comprising the consolidation of such a structure (formation of a web by dry method directly on to other webs formed solely by dry method D21H 5/2628 and subgroups)}	13/10	. Organic non-cellulose fibres
5/2685	. . . {by dry method on to a web or on or between several preformed webs, at least one of which has been formed by another method, e.g. by wet method}	13/12	. . from macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
5/2692	. . . {Assembly of several preformed webs, at least one of which has been formed by dry method}	13/14	. . . Polyalkenes, e.g. polystyrene {polyethylene}
11/00	Pulp or paper, comprising cellulose or lignocellulose fibres of natural origin only	13/16	. . . Polyalkenylalcohols; Polyalkenylethers; Polyalkenylesters
11/02	. Chemical or chemomechanical {or chemothermomechanical} pulp	13/18	. . . Polymers of unsaturated acids or derivatives thereof, e.g. polyacrylonitriles
		13/20	. . from macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
		13/22	. . . Condensation polymers of aldehydes or ketones
		13/24	. . . Polyesters
		13/26	. . . Polyamides; Polyimides
		13/28	. . from natural polymers
		13/30	. . . Non-cellulose polysaccharides
		13/32	. . . . Alginate fibres
		13/34	. . . Protein fibres
		13/36	. Inorganic fibres or flakes
		13/38	. . siliceous
		13/40	. . . vitreous, e.g. mineral wool, glass fibres
		13/42	. . . Asbestos
		13/44	. . . Flakes, e.g. mica, vermiculite
		13/46	. . Non-siliceous fibres, e.g. from metal oxides
		13/48	. . . Metal or metallised fibres
		13/50	. . . Carbon fibres
		15/00	Pulp or paper, comprising fibres or web-forming material characterised by features other than their chemical constitution
		15/02	. characterised by configuration
		15/04	. . crimped, kinked, curled or twisted fibres
		15/06	. . Long fibres, i.e. fibres exceeding the upper length limit of conventional paper-making fibres; Filaments
		15/08	. . Flakes (D21H 13/44 takes precedence)
		15/10	. . Composite fibres
		15/12	. . . partly organic, partly inorganic

17/00	Non-fibrous material added to the pulp, characterised by its constitution; Paper-impregnating material characterised by its constitution	17/39	. . . . . forming ether crosslinkages, e.g. alkylol groups
		17/40	. . . . . unsaturated
		17/41	. . . . . containing ionic groups
		17/42	. . . . . anionic
		17/43	. . . . . Carboxyl groups or derivatives thereof
		17/44	. . . . . cationic
		17/45	. . . . . Nitrogen-containing groups
		17/455	. . . . . {comprising tertiary amine or being at least partially quaternised}
		17/46	. . . . . obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
		17/47	. . . . . Condensation polymers of aldehydes or ketones
		17/48	. . . . . with phenols
		17/49	. . . . . with compounds containing hydrogen bound to nitrogen
		17/50	. . . . . Acyclic compounds
		17/51	. . . . . Triazines, e.g. melamine
		17/52	. . . . . Epoxy resins
		17/53	. . . . . Polyethers; Polyesters
		17/54	. . . . . obtained by reactions forming in the main chain of the macromolecule a linkage containing nitrogen
		17/55	. . . . . Polyamides; Polyaminoamides; Polyester-amides
		17/56	. . . . . Polyamines; Polyimines; Polyester-imides
		17/57	. . . . . Polyureas; Polyurethanes
		17/58	. . . . . obtained by reactions forming in the main chain of the macromolecule a linkage containing sulfur
		17/59	. . . . . obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon
		17/60	. Waxes
		17/61	. Bitumen
		17/62	. Rosin; Derivatives thereof
		17/63	. Inorganic compounds
		17/64	. Alkaline compounds
		17/65	. Acid compounds
		17/66	. Salts, e.g. alums
		17/67	. Water-insoluble compounds, e.g. fillers, pigments
		17/675	. . . {Oxides, hydroxides or carbonates}
		17/68	. . . siliceous, e.g. clays
		17/69	. . . modified, e.g. by association with other compositions prior to incorporation in the pulp or paper
		17/70	. . forming new compounds <i>in situ</i> , e.g. within the pulp or paper, by chemical reaction with other substances added separately
		17/71	. {Mixtures of material (D21H 17/69 takes precedence); Pulp or paper comprising several different materials not incorporated by special processes (D21H 23/10, D21H 23/70, D21H 23/76 take precedence)}
		17/72	. . {of organic material}
		17/73	. . {of inorganic material}
		17/74	. . {of organic and inorganic material}
		19/00	Coated paper (coated fibreboard D21J 1/08); Coating material (recording sheets characterised by the coating used to improve ink, dye or pigment receptivity B41M 5/50)
		19/02	. Metal coatings (D21H 19/66 takes precedence)
17/005	. {Microorganisms or enzymes}		
17/01	. Waste products, e.g. sludge		
17/02	. Material of vegetable origin (proteins D21H 17/22; lignins D21H 17/23; polysaccharides D21H 17/24; rosin D21H 17/62)		
17/03	. Non-macromolecular organic compounds		
17/04	. . Hydrocarbons		
17/05	. . containing elements other than carbon and hydrogen only		
17/06	. . . Alcohols; Phenols; Ethers; Aldehydes; Ketones; Acetals; Ketals		
17/07	. . . Nitrogen-containing compounds		
17/08	. . . . Isocyanates		
17/09	. . . Sulfur-containing compounds		
17/10	. . . Phosphorus-containing compounds		
17/11	. . . Halides		
17/12	. . . Organo-metallic compounds		
17/13	. . . Silicon-containing compounds		
17/14	. . . Carboxylic acids; Derivatives thereof		
17/15	. . . . Polycarboxylic acids, e.g. maleic acid		
17/16	. . . . . Addition products thereof with hydrocarbons		
17/17	. . . Ketenes, e.g. ketene dimers		
17/18	. . . forming new compounds <i>in situ</i> , e.g. within the pulp or paper, by chemical reaction with itself, or other added substances, e.g. by grafting on the fibres		
17/19	. . . . by reactions only involving carbon-to-carbon unsaturated bonds		
17/20	. Macromolecular organic compounds		
17/21	. . of natural origin; Derivatives thereof		
17/22	. . . Proteins		
17/23	. . . Lignins		
17/24	. . . Polysaccharides		
17/25	. . . . Cellulose		
17/26	. . . . . Ethers thereof		
17/27	. . . . . Esters thereof		
17/28	. . . . Starch		
17/29	. . . . . cationic		
17/30	. . . . Alginate acid or alginates		
17/31	. . . . Gums		
17/32	. . . . . Guar {or other polygalactomannan} gum		
17/33	. . Synthetic macromolecular compounds		
17/34	. . . obtained by reactions only involving carbon-to-carbon unsaturated bonds		
17/35	. . . . Polyalkenes, e.g. polystyrene		
17/36	. . . . Polyalkenylalcohols; Polyalkenylethers; Polyalkenylesters		
17/37	. . . . Polymers of unsaturated acids or derivatives thereof, e.g. polyacrylates		
17/375	. . . . . {Poly(meth)acrylamide}		
17/38	. . . . containing crosslinkable groups		

- 19/04 . . applied as foil
- 19/06 . . applied as liquid or powder
- 19/08 . . applied as vapour, e.g. in vacuum
- 19/10 . Coatings without pigments ([D21H 19/66 takes precedence](#))
- 19/12 . . applied as a solution using water as the only solvent, e.g. in the presence of acid or alkaline compounds
- 19/14 . . applied in a form other than the aqueous solution defined in group [D21H 19/12](#)
- 19/16 . . . comprising curable or polymerisable compounds ([D21H 19/24 takes precedence](#))
- 19/18 . . . comprising waxes
- 19/20 . . . comprising macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
- 19/22 Polyalkenes, e.g. polystyrene
- 19/24 . . . comprising macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
- 19/26 Aminoplasts
- 19/28 Polyesters
- 19/30 Polyamides; Polyimides
- 19/32 obtained by reactions forming a linkage containing silicon in the main chain of the macromolecule
- 19/34 . . . comprising cellulose or derivatives thereof
- 19/36 . Coatings with pigments ([D21H 19/66 takes precedence](#); [metal powder D21H 19/06](#))
- 19/38 . . characterised by the pigments
- 19/385 . . . {Oxides, hydroxides or carbonates}
- 19/40 . . . siliceous, e.g. clays
- 19/42 . . . at least partly organic
- 19/44 . . characterised by the other ingredients, e.g. the binder or dispersing agent
- 19/46 . . . Non-macromolecular organic compounds
- 19/48 Diolefins, e.g. butadiene; Aromatic vinyl monomers, e.g. styrene; Polymerisable unsaturated acids or derivatives thereof, e.g. acrylic acid
- 19/50 . . . Proteins
- 19/52 . . . Cellulose; Derivatives thereof
- 19/54 . . . Starch
- 19/56 . . . Macromolecular organic compounds or oligomers thereof obtained by reactions only involving carbon-to-carbon unsaturated bonds
- 19/58 Polymers or oligomers of diolefins, aromatic vinyl monomers or unsaturated acids or derivatives thereof
- 19/60 Polyalkenylalcohols; Polyalkenylethers; Polyalkenylesters
- 19/62 . . . Macromolecular organic compounds or oligomers thereof obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
- 19/64 . . . Inorganic compounds
- 19/66 . Coatings characterised by a special visual effect, e.g. patterned, textured ([marbled paper D21H 27/04](#))
- 19/68 . . uneven, broken, discontinuous
- 19/70 . . with internal voids, e.g. bubble coatings
- 19/72 . Coated paper characterised by the paper substrate
- 19/74 . . the substrate having an uneven surface, e.g. crêped or corrugated paper
- 19/76 . . the substrate having specific absorbent properties
- 19/78 . . . being substantially impervious to the coating
- 19/80 . Paper comprising more than one coating ([D21H 19/02 takes precedence](#))
- 19/82 . . superposed {[D21H 19/84 takes precedence](#)}
- 19/822 . . . {two superposed coatings, both being pigmented}
- 19/824 . . . {two superposed coatings, both being non-pigmented}
- 19/826 . . . {two superposed coatings, the first applied being pigmented and the second applied being non-pigmented}
- 19/828 . . . {two superposed coatings, the first applied being non-pigmented and the second applied being pigmented}
- 19/84 . . on both sides of the substrate
- 21/00 Non-fibrous material added to the pulp, characterised by its function, form or properties; Paper-impregnating or coating material, characterised by its function, form or properties**
- 21/02 . Agents for preventing deposition on the paper mill equipment, e.g. pitch or slime control ([removal of fats, resins, pitch, or waxes D21C 9/08](#))
- 21/04 . . Slime-control agents
- 21/06 . Paper forming aids
- 21/08 . . Dispersing agents for fibres
- 21/10 . . Retention agents or drainage improvers
- 21/12 . . Defoamers
- 21/14 . characterised by function or properties in or on the paper ([D21H 19/66](#), [D21H 27/02 take precedence](#))
- 21/143 . . {Agents preventing ageing of paper, e.g. radiation absorbing substances}
- 21/146 . . {Crêping adhesives}
- 21/16 . . Sizing or water-repelling agents
- 21/18 . . Reinforcing agents
- 21/20 . . . Wet strength agents
- 21/22 . . Agents rendering paper porous, absorbent or bulky
- 21/24 . . . Surfactants
- 21/26 . . Agents rendering paper transparent or translucent
- 21/28 . . Colorants {; Pigments or opacifying agents}
- 21/285 . . . {insoluble}
- 21/30 . . Luminescent or fluorescent substances, e.g. for optical bleaching ([D21H 21/40 takes precedence](#))
- 21/32 . . Bleaching agents ([bleaching cellulose pulp D21C 9/10](#))
- 21/34 . . Ignifugeants
- 21/36 . . Biocidal agents, e.g. fungicidal, bactericidal, insecticidal agents
- 21/38 . . Corrosion-inhibiting agents or anti-oxidants
- 21/40 . . Agents facilitating proof of genuineness or preventing fraudulent alteration, e.g. for security paper ([watermarking B41M 3/10](#), [D21F 1/44](#); [security printing B41M 3/14](#); [security or banknotes characterised by colour effects B42D 25/29](#), [B42D 25/30](#); [testing paper currency or valuable papers for genuineness G07D 7/00](#))
- 21/42 . . . Ribbons or strips ([filaments D21H 15/06](#))
- 21/44 . . . Latent security elements, i.e. detectable or becoming apparent only by use of special verification or tampering devices or methods

- 21/46 Elements suited for chemical verification or impeding chemical tampering, e.g. by use of eradicators
- 21/48 Elements suited for physical verification, e.g. by irradiation
- 21/50 . characterised by form ([D21H 19/66](#), [D21H 21/42](#), [D21H 27/02](#) take precedence)
- 21/52 . . Additives of definite length or shape
- 21/54 . . . being spherical, e.g. microcapsules, beads
- 21/56 . . Foam
- 23/00 Processes or apparatus for adding material to the pulp or to the paper (applying liquids or other fluent material to surfaces, in general [B05](#); processes for making continuous lengths of paper [D21F 11/00](#))**
- NOTE**
- Processes or apparatus used for addition to the paper during its manufacture, i.e. on-machine, are classified in groups [D21H 23/24](#) - [D21H 23/28](#) if they are specially influenced by, or specially adapted to the paper-making process.
- 23/02 . characterised by the manner in which substances are added
- 23/04 . . Addition to the pulp; After-treatment of added substances in the pulp
- 23/06 . . . Controlling the addition
- 23/08 by measuring pulp properties, e.g. zeta potential, pH
- 23/10 at least two kinds of compounds being added
- 23/12 by measuring properties of the formed web
- 23/14 by selecting point of addition or time of contact between components
- 23/16 Addition before or during pulp beating or refining ([disintegrating fibrous raw materials in mills in the presence of chemical agents \[D21B 1/16\]\(#\); methods of beating \[D21D 1/02\]\(#\); methods of refining \[D21D 1/20\]\(#\)](#))
- 23/18 Addition at a location where shear forces are avoided before sheet-forming, e.g. after pulp beating or refining
- 23/20 . . . Apparatus therefor
- 23/22 . . Addition to the formed paper
- 23/24 . . . during paper manufacture
- 23/26 by selecting point of addition or moisture content of the paper
- 23/28 Addition before the dryer section, e.g. at the wet end or press section
- 23/30 . . . Pretreatment of the paper ([D21H 23/70](#), [D21H 23/76](#) take precedence)
- 23/32 . . . by contacting paper with an excess of material, e.g. from a reservoir or in a manner necessitating removal of applied excess material from the paper ([D21H 23/66](#) takes precedence; removing excess material [D21H 25/08](#))
- 23/34 Knife or blade type coaters
- 23/36 Knife or blade forming part of the fluid reservoir, e.g. puddle-type trailing blade {or short-dwell coaters}
- 23/38 the fluid material being applied with a special device, e.g. with a roll in a flooded-nip inverted blade coater
- 23/40 only one side of the paper being in contact with the material ([D21H 23/34](#) takes precedence)
- 23/42 Paper being at least partly surrounded by the material on both sides ([D21H 23/34](#) takes precedence)
- 23/44 Treatment with a gas or vapour
- 23/46 . . . Pouring or allowing the fluid to flow in a continuous stream on to the surface, the entire stream being carried away by the paper ([D21H 23/66](#) takes precedence)
- 23/48 Curtain coaters
- 23/50 . . . Spraying or projecting ([D21H 23/44](#), [D21H 23/66](#) take precedence)
- 23/52 . . . by contacting paper with a device carrying the material ([D21H 23/32](#), [D21H 23/46](#), [D21H 23/66](#) take precedence)
- 23/54 Rubbing devices, e.g. brush, pad, felt
- 23/56 Rolls ([D21H 23/38](#) takes precedence)
- 23/58 Details thereof, e.g. surface characteristics, peripheral speed
- 23/60 the material on the applicator roll being subjected to a particular treatment before applying to the paper ([D21H 23/64](#) takes precedence)
- 23/62 Reverse roll coating, i.e. applicator roll surface moving in direction opposite to that of the paper
- 23/64 the material being non-fluent at the moment of transfer, e.g. in form of preformed, at least partially hardened coating
- 23/66 . . . Treating discontinuous paper, e.g. sheets, blanks, rolls
- 23/68 whereby the paper moves continuously
- 23/70 . . . Multistep processes; Apparatus for adding one or several substances in portions or in various ways to the paper, not covered by another single group of this main group
- 23/72 Plural serial stages only
- 23/74 Apparatus permitting switching from one technique to another
- 23/76 . characterised by choice of auxiliary compounds which are added separately from at least one other compound, e.g. to improve the incorporation of the latter or to obtain an enhanced combined effect ([D21H 17/18](#), [D21H 17/70](#), [D21H 23/10](#) take precedence)
- 23/765 . . {Addition of all compounds to the pulp}
- 23/78 . Controlling or regulating not limited to any particular process or apparatus
- 25/00 After-treatment of paper not provided for in groups [D21H 17/00](#) - [D21H 23/00](#)**
- 25/005 . {Mechanical treatment ([D21H 25/08](#), [D21H 25/18](#) take precedence)}
- 25/02 . Chemical or biochemical treatment ([D21H 25/18](#) takes precedence)
- 25/04 . Physical treatment, e.g. heating, irradiating ([D21H 25/18](#) takes precedence; dryer section of machines for making continuous webs of paper [D21F 5/00](#))

D21H

- 25/06 . . . of impregnated or coated paper ([D21H 25/08](#) takes precedence)
- 25/08 . . . Rearranging applied substances, e.g. metering, smoothing; Removing excess material
- 25/10 . . . with blades
- 25/12 . . . with an essentially cylindrical body, e.g. roll or rod
- 25/14 the body being a casting drum {, a heated roll or a calender}
- 25/16 . . . with a blast of vapour or gas, e.g. air knife
- 25/18 . . . of old paper as in books, documents, e.g. restoring
- 27/00 Special paper not otherwise provided for, e.g. made by multi-step processes**
- NOTE**

This group provides for the classification of paper with special properties or applications which are only partially or not at all provided for elsewhere in the classification. Whenever possible, however, these papers are classified according to the criteria used in the other groups of this subclass.
- 27/001 . . . {Release paper}
- 27/002 . . . {Tissue paper; Absorbent paper ([D21H 21/22](#), [D21H 27/02](#), [D21H 27/20](#) take precedence; toilet paper [A47K 10/00](#); absorbent pads for physiological fluids [A61L 15/16](#); making on paper-making machines [D21F 11/00](#))}
- 27/004 . . . {characterised by specific parameters ([D21H 27/008](#) takes precedence)}
- 27/005 {relating to physical or mechanical properties, e.g. tensile strength, stretch, softness}
- 27/007 {relating to absorbency, e.g. amount or rate of water absorption, optionally in combination with other parameters relating to physical or mechanical properties}
- 27/008 . . . {characterised by inhomogeneous distribution or incomplete coverage of properties, e.g. obtained by using materials of chemical compounds ([D21H 23/02](#), [D21H 23/76](#), [D21H 27/02](#) take precedence)}
- 27/02 . . . Patterned paper (patterned coatings [D21H 19/66](#); embossing [B31F 1/07](#); prepared on the paper-making machines [D21F 11/00](#))
- 27/04 . . . marbled
- 27/06 . . . Vegetable or imitation parchment; Glassine paper
- 27/08 . . . Filter paper (self-supporting filtering material [B01D 39/14](#); making on paper-making machines [D21F 11/14](#))
- 27/10 . . . Packing paper (packaging materials of special type or form [B65D 65/38](#))
- 27/14 . . . Paper having stable form or dimension; Curl-resistant paper (anticoil photographic support [G03C 1/81](#))
- 27/16 . . . Pure paper, i.e. paper lacking or having low content of contaminants (after-treatment of cellulose pulp [D21C 9/00](#))
- 27/18 . . . Paper- or board-based structures for surface covering
- 27/20 . . . Flexible structures being applied by the user, e.g. wallpaper (printed wallpapers [B41M 3/18](#); paperhanging [B44C 7/00](#); pregummed wallpaper [C09J 7/21](#))
- 27/22 . . . Structures being applied on the surface by special manufacturing processes, e.g. in presses
- 27/24 characterised by the surface to be covered being phenolic-resin paper laminates, vulcan fibre or similar cellulosic fibreboards
- 27/26 characterised by the overlay sheet or the top layers of the structures (decorative panels [B44C 5/04](#); wood grain effects [B44F 9/02](#))
- 27/28 treated to obtain specific resistance properties, e.g. against wear or weather (water-repelling agents [D21H 21/16](#))
- 27/30 . . . Multi-ply (for surface covering [D21H 27/18](#); making on paper-making machines [D21F 9/00](#), [D21F 11/00](#))
- NOTE**

Layered products classified in this group are also classified in subclass [B32B](#)
- 27/32 . . . with materials applied between the sheets (attaching together paper or cardboard sheets [B31F 5/00](#); adhesives [C09J](#))
- 27/34 Continuous materials, e.g. filaments, sheets, nets
- 27/36 Films made from synthetic macromolecular compounds
- 27/38 at least one of the sheets having a fibrous composition differing from that of other sheets
- 27/40 at least one of the sheets being non-planar, e.g. crêped (crêping or corrugating paper [B31F](#))
- 27/42 . . . comprising dry-laid paper