

**CPC****COOPERATIVE PATENT CLASSIFICATION****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**

**NOTE**

This subclass covers also pulp compositions for the preparation of fireboard or other fibrous articles by wet processes.

In this subclass, the following terms are used with the meaning indicated:

"pulp" means a dispersion, { e.g. an aqueous sus-pension,} 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.

In groups [D21H 11/00](#) to [D21H 15/00](#), in the absence of an indication to the contrary, classification is made in the last appropriate place.

Attention is drawn to the use of Combination Sets as specified in the Notes after groups [D21H 17/00](#), [D21H 17/69](#), [D21H 17/71](#), [D21H 19/00](#), [D21H 21/00](#), [D21H 21/14](#), [D21H 23/00](#), [D21H 23/22](#), [D21H 25/00](#) and [D21H 27/00](#).

**IPC4 groups****D21H 1/00**

**Paper; Cardboard (fibreboard D21J)**

**NOTE**

Layered products classified in this group are also classified in subclass B32B

**D21H 1/02**

. Multi-ply material {finished plies}

**D21H 1/04**

. . by using an adhesive

**D21H 1/06**

. . Apparatus

**D21H 1/08**

. . with incorporated laminae of threads or fabric

**D21H 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.

- D21H 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}
- D21H 3/825 . . {substances having a characteristic form, e.g. powders, disintegrated resin foams}
- D21H 5/00** **Special paper or cardboard not otherwise provided for** (duplicating or recording paper B41M)
- D21H 5/0002 . {Flame-resistant papers; (complex) compositions rendering paper fire-resistant}
- D21H 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. parchmentising or vulcanising [D21H 5/08](#), treatment with viscose [D21H 17/25](#)
- D21H 5/0007 . . {Pretreatment of paper to which liquids or other fluent materials are to be applied}
- D21H 5/001 . . {by treating paper or board in discontinuous form, e.g. separate sheets, blanks, paper rolls, or the like}
- D21H 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}
- D21H 5/0015 . . . {only one side of the paper being in contact with the treating medium, e.g. paper carried by support}
- D21H 5/0017 . . . . {Trailing blade coaters, e.g. blade engaging paper and forming bottom wall of reservoir}
- D21H 5/002 . . . {the paper being at least partly surrounded by treating medium on both sides}
- D21H 5/0022 . . . . {treating medium being a gas or vapour}
- D21H 5/0025 . . {by contact with a device carrying the treating material (C8 and [C12](#) take precedence)}
- D21H 5/0027 . . . {by a rubbing device, e.g. with brushes or pads}
- D21H 5/003 . . . {with a roller}
- D21H 5/0032 . . . . {Details thereof, e.g. surface characteristics, peripheral speed}
- D21H 5/0035 . . . . . {the coating material on the applicator roller being subjected to a particular treatment before applying to paper}
- D21H 5/0037 . . . . . {Reverse roll coating, e.g. applicator surface moving in direction opposite to that of paper}
- D21H 5/004 . . . {the treating material being non-fluent at the moment of transfer, e.g. in form of preformed, at least partially hardened, coating}
- D21H 5/0042 . . {by pouring or allowing to flow in a continuous stream onto the surface, the entire stream being carried away by the paper}
- D21H 5/0045 . . . {Falling curtain method}
- D21H 5/0047 . . {by spraying or projecting ([D21H 5/0022](#) takes precedence)}
- D21H 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 19/82; apparatus for making multi-ply material [D21H 1/06](#)}}

- D21H 5/0052 . . . {Plural serial stages}
- D21H 5/0055 . . . {Plural parallel stages}
- D21H 5/0057 . . . {Apparatus permitting switching from one technique to another}
- D21H 5/006 . . {Controlling or regulating (controlling or regulating in general [G05](#))}
- D21H 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](#) to [D21H 25/18](#))}
- D21H 5/0065 . . . . {with blades (trailing blade [D21H 5/0017](#))}
- D21H 5/0067 . . . . {with an essentially cylindrical body, e.g. roll or rod}
- D21H 5/007 . . . . {with a blast of gas or vapour, e.g. air knife}
  
- D21H 5/0072 . {Anti-slip papers}
  
- D21H 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 7/046](#))}
  
- D21H 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](#))}
  
- D21H 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](#))}
  
- D21H 5/0082 . {Wall papers (printed wallpapers [B41M 3/18](#); pregummed wall paper [C09J 7/04](#))}
  
- D21H 5/0085 . {Paper for surface-protection and decorative purposes, e.g. pressure laminates (wall paper [D21H 5/0082](#); multi-ply material [D21H 1/02](#))}
- D21H 5/0087 . . {Aspect concerning the core layer(s)}
- D21H 5/009 . . {Aspect concerning the anchor layer(s)}
  
- D21H 5/0092 . {Post-treated paper (after-treatment following application of substances to finished paper [D21H 25/00](#) to [D21H 25/18](#), [D21H 5/0062](#); after-treatment of printed works [B41M 7/00](#); working paper [B31F](#); paper from fibres which can be modified [D21H 5/1272](#))}
  
- D21H 5/0095 . . {with means capable of destructing or weakening the paper structure, e.g. cellulose decomposing agents (working-up waste paper [D21C 5/02](#))}
- D21H 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](#))}
  
- D21H 5/02 . Patterned paper
- D21H 5/025 . . {Webs provided with apertures}
- D21H 5/04 . . marbled
- D21H 5/06 . . Apparatus

- D21H 5/08 . Vegetable parchment
- D21H 5/12 . characterised by the use of special fibrous materials ([felts or other non-woven fabrics D04](#))
- D21H 5/1209 . . {of protein fibres}
- D21H 5/1218 . . {of crimped or crimpable fibres}
- D21H 5/1227 . . {of polysaccharide fibres other than cellulosic, e.g. alginate fibres}
- D21H 5/1236 . . {of fibres which have been treated to render them suitable for sheet formation, e.g. fibrillatable fibres}
- D21H 5/1245 . . {of long or continuous filaments}
- D21H 5/1254 . . {of fibres which have been treated to improve their dispersion in the paper-making furnish}
- D21H 5/1263 . . {of fibres which have been swollen}
- D21H 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 to D21H 25/18](#))}
- D21H 5/1281 . . . {by chemical treatment}
- D21H 5/129 . . . {by thermal treatment}
- D21H 5/14 . . of cellulose fibres only
- D21H 5/141 . . . {of fibrous cellulose derivatives}
- D21H 5/143 . . . . {grafted or encapsulated cellulose}
- D21H 5/145 . . . . {cellulose esters}
- D21H 5/146 . . . . . {cellulose acetate}
- D21H 5/148 . . . {viscose}
- D21H 5/16 . . Tobacco or cigarette paper
- D21H 5/18 . . of inorganic fibres with or without cellulose fibres
- D21H 5/183 . . . {of asbestos fibres}
- D21H 5/186 . . . {of mica fibres or flakes}
- D21H 5/20 . . of organic non-cellulosic fibres too short for spinning, with or without cellulose fibres
- D21H 5/202 . . . {polyolefins}
- D21H 5/205 . . . {acrylic fibres}
- D21H 5/207 . . . {polyester fibres}
- D21H 5/22 . Fungicidal, bactericidal, insecticidal, disinfecting, antiseptic, or corrosion-inhibiting paper {antistatic, antioxygenic paper ([toilet paper A47K 10/16](#))}
- D21H 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](#)})
- D21H 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}
- D21H 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](#))}

- D21H 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](#))}
- D21H 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](#))}
- D21H 5/2621 . . . {Distribution of the fibres in the gas stream and on the forming surface}
- D21H 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](#))}
- D21H 5/2635 . . . {forming a final homogeneous product}
- D21H 5/2642 . . . {forming a final non-homogeneous product}
- D21H 5/265 . . {Treatment of the formed web}
- D21H 5/2657 . . {Consolidation}
- D21H 5/2664 . . . {Addition of a binder, e.g. synthetic resins or water}
- D21H 5/2671 . . . {Compression of the web, optionally with the use of a binder}
- D21H 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)}
- D21H 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}
- D21H 5/2692 . . {Assembly of several preformed webs, at least one of which has been formed by dry method}

## **D21H 11/00 Pulp or paper, comprising cellulose or lignocellulose fibres of natural origin only**

- D21H 11/02 . Chemical or chemomechanical {or chemothermomechanical} pulp
- D21H 11/04 . . Kraft or sulfate pulp
- D21H 11/06 . . Sulfite or bisulfite pulp
- D21H 11/08 . Mechanical or thermomechanical pulp
- D21H 11/10 . Mixtures of chemical and mechanical pulp
- D21H 11/12 . Pulp from non-woody plants or crops, e.g. cotton, flax, straw, bagasse
- D21H 11/14 . Secondary fibres (working-up waste paper [D21C 5/02](#))
- D21H 11/16 . modified by a particular after-treatment
- D21H 11/18 . . Highly hydrated, swollen or fibrillatable fibres
- D21H 11/20 . . Chemically or biochemically modified fibres
- D21H 11/22 . . . cationised

<b>D21H 13/00</b>	<b>Pulp or paper, comprising synthetic cellulose or non-cellulose fibres or web-forming material</b> ( <a href="#">chemical features in the manufacture of artificial fibres D01F</a> )
D21H 13/02	. Synthetic cellulose fibres
D21H 13/04	.. Cellulose ethers
D21H 13/06	.. Cellulose esters
D21H 13/08	.. from regenerated cellulose
D21H 13/10	. Organic non-cellulose fibres
D21H 13/12	.. from macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
D21H 13/14	... Polyalkenes, e.g. polystyrene {polyethylene}
D21H 13/16	... Polyalkenylalcohols; Polyalkenylethers; Polyalkenylesters
D21H 13/18	... Polymers of unsaturated acids or derivatives thereof, e.g. polyacrylonitriles
D21H 13/20	.. from macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
D21H 13/22	... Condensation polymers of aldehydes or ketones
D21H 13/24	... Polyesters
D21H 13/26	... Polyamides; Polyimides
D21H 13/28	.. from natural polymers
D21H 13/30	... Non-cellulose polysaccharides
D21H 13/32	.... Alginate fibres
D21H 13/34	... Protein fibres
D21H 13/36	. Inorganic fibres or flakes
D21H 13/38	.. siliceous
D21H 13/40	... vitreous, e.g. mineral wool, glass fibres
D21H 13/42	... Asbestos
D21H 13/44	... Flakes, e.g. mica, vermiculite
D21H 13/46	.. Non-siliceous fibres, e.g. from metal oxides
D21H 13/48	... Metal or metallised fibres
D21H 13/50	... Carbon fibres
<b>D21H 15/00</b>	<b>Pulp or paper, comprising fibres or web-forming material characterised by features other than their chemical constitution</b>
D21H 15/02	. characterised by configuration
D21H 15/04	.. crimped, kinked, curled or twisted fibres
D21H 15/06	.. Long fibres, i.e. fibres exceeding the upper length limit of conventional paper-making fibres; Filaments
D21H 15/08	.. Flakes ( <a href="#">D21H 13/44 takes precedence</a> )
D21H 15/10	.. Composite fibres
D21H 15/12	... partly organic, partly inorganic

**D21H 17/00**

**Non-fibrous material added to the pulp, characterised by its constitution;  
Paper-impregnating material characterised by its constitution**

**NOTE**

In this group, in the absence of an indication to the contrary, a material is classified in the last appropriate place.

In this group, it is desirable to classify the individual constituents of fibres used in the pulp or paper using Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 15/00](#).

- [D21H 17/005](#) . {Micro-organisms or enzymes}
- [D21H 17/01](#) . Waste products, e.g. sludge
- [D21H 17/02](#) . Material of vegetable origin ([proteins D21H 17/22](#); [lignins D21H 17/23](#); [polysaccharides D21H 17/24](#); [rosin D21H 17/62](#))
- [D21H 17/03](#) . Non-macromolecular organic compounds
- [D21H 17/04](#) . . Hydrocarbons
- [D21H 17/05](#) . . containing elements other than carbon and hydrogen only
- [D21H 17/06](#) . . . Alcohols; Phenols; Ethers; Aldehydes; Ketones; Acetals; Ketals
- [D21H 17/07](#) . . . Nitrogen-containing compounds
- [D21H 17/08](#) . . . . Isocyanates
- [D21H 17/09](#) . . . Sulfur-containing compounds
- [D21H 17/10](#) . . . Phosphorus-containing compounds
- [D21H 17/11](#) . . . Halides
- [D21H 17/12](#) . . . Organo-metallic compounds
- [D21H 17/13](#) . . . Silicon-containing compounds
- [D21H 17/14](#) . . . Carboxylic acids; Derivatives thereof
- [D21H 17/15](#) . . . . Polycarboxylic acids, e.g. maleic acid
- [D21H 17/16](#) . . . . . Addition products thereof with hydrocarbons
- [D21H 17/17](#) . . . Ketenes, e.g. ketene dimers
- [D21H 17/18](#) . . . forming new compounds in situ, e.g. within the pulp or paper, by chemical reaction with itself, or other added substances, e.g. by grafting on the fibres
- [D21H 17/19](#) . . . . by reactions only involving carbon-to-carbon unsaturated bonds
- [D21H 17/20](#) . Macromolecular organic compounds
- [D21H 17/21](#) . . of natural origin; Derivatives thereof
- [D21H 17/22](#) . . . Proteins
- [D21H 17/23](#) . . . Lignins
- [D21H 17/24](#) . . . Polysaccharides
- [D21H 17/25](#) . . . . Cellulose
- [D21H 17/26](#) . . . . . Ethers thereof

D21H 17/27	.....	Esters thereof
D21H 17/28	....	Starch
D21H 17/29	.....	cationic
D21H 17/30	....	Alginic acid or alginates
D21H 17/31	....	Gums
D21H 17/32	.....	Guar {or other polygalactomannan} gum
D21H 17/33	..	Synthetic macromolecular compounds
D21H 17/34	...	obtained by reactions only involving carbon-to-carbon unsaturated bonds
D21H 17/35	....	Polyalkenes, e.g. polystyrene
D21H 17/36	....	Polyalkenylalcohols; Polyalkenylethers; Polyalkenylesters
D21H 17/37	....	Polymers of unsaturated acids or derivatives thereof, e.g. polyacrylates
D21H 17/375	.....	{Poly(meth)acrylamide}
D21H 17/38	....	containing crosslinkable groups
D21H 17/39	.....	forming ether crosslinkages, e.g. alkylol groups
D21H 17/40	.....	unsaturated
D21H 17/41	....	containing ionic groups
D21H 17/42	.....	anionic
D21H 17/43	.....	Carboxyl groups or derivatives thereof
D21H 17/44	.....	cationic
D21H 17/45	.....	Nitrogen-containing groups
D21H 17/455	.....	{comprising tertiary amine or being at least partially quaternised}
D21H 17/46	...	obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
D21H 17/47	....	Condensation polymers of aldehydes or ketones
D21H 17/48	.....	with phenols
D21H 17/49	.....	with compounds containing hydrogen bound to nitrogen
D21H 17/50	.....	Acyclic compounds
D21H 17/51	.....	Triazines, e.g. melamine
D21H 17/52	....	Epoxy resins
D21H 17/53	....	Polyethers; Polyesters
D21H 17/54	....	obtained by reactions forming in the main chain of the macromolecule a linkage containing nitrogen
D21H 17/55	.....	Polyamides; Polyaminoamides; Polyester-amides
D21H 17/56	.....	Polyamines; Polyimines; Polyester-imides
D21H 17/57	.....	Polyureas; Polyurethanes
D21H 17/58	....	obtained by reactions forming in the main chain of the macromolecule a linkage containing sulfur
D21H 17/59	....	obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon
D21H 17/60	.	Waxes
D21H 17/61	.	Bitumen



- D21H 17/62 . Rosin; Derivatives thereof
- D21H 17/63 . Inorganic compounds
- D21H 17/64 . . Alkaline compounds
- D21H 17/65 . . Acid compounds
- D21H 17/66 . . Salts, e.g. alums
- D21H 17/67 . . Water-insoluble compounds, e.g. fillers, pigments
- D21H 17/675 . . . {Oxides, hydroxides or carbonates}
- D21H 17/68 . . . siliceous, e.g. clays
- D21H 17/69 . . . modified, e.g. by association with other compositions prior to incorporation in the pulp or paper

**NOTE**

In this group, it is desirable to classify the individual components of the mixtures using Combination Sets with symbols chosen from groups [D21H 17/00](#) or [D21H 21/00](#).

- D21H 17/70 . . forming new compounds in situ, e.g. within the pulp or paper, by chemical reaction with other substances added separately
- D21H 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)}

**NOTE**

In this group, it is desirable to classify the individual components of the mixtures using Combination Sets with symbols chosen from groups [D21H 17/00](#) or [D21H 21/00](#).

- D21H 17/72 . . of organic material
- D21H 17/73 . . of inorganic material
- D21H 17/74 . . of organic and inorganic material

**D21H 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](#))

**NOTE**

In this group, it is desirable to classify the individual constituents of the fibres used in the pulp or the paper, the non-fibrous material added to the pulp or the impregnating or coating material, using Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 17/00](#) or [D21H 21/14](#) to [D21H 21/56](#).

- D21H 19/02 . Metal coatings ([D21H 19/66](#) takes precedence)
- D21H 19/04 . . applied as foil
- D21H 19/06 . . applied as liquid or powder
- D21H 19/08 . . applied as vapour, e.g. in vacuum

- D21H 19/10 . Coatings without pigments ([D21H 19/66 takes precedence](#))
- D21H 19/12 . . applied as a solution using water as the only solvent, e.g. in the presence of acid or alkaline compounds
- D21H 19/14 . . applied in a form other than the aqueous solution defined in group [D21H 19/12](#)
- D21H 19/16 . . . comprising curable or polymerisable compounds ([D21H 19/24 takes precedence](#))
- D21H 19/18 . . . comprising waxes
- D21H 19/20 . . . comprising macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
- D21H 19/22 . . . . Polyalkenes, e.g. polystyrene
- D21H 19/24 . . . comprising macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
- D21H 19/26 . . . . Aminoplasts
- D21H 19/28 . . . . Polyesters
- D21H 19/30 . . . . Polyamides; Polyimides
- D21H 19/32 . . . . obtained by reactions forming a linkage containing silicon in the main chain of the macromolecule
- D21H 19/34 . . . comprising cellulose or derivatives thereof
- D21H 19/36 . Coatings with pigments ([D21H 19/66 takes precedence](#); metal powder [D21H 19/06](#))
- D21H 19/38 . . characterised by the pigments
- D21H 19/385 . . . {Oxides, hydroxides or carbonates}
- D21H 19/40 . . . siliceous, e.g. clays
- D21H 19/42 . . . at least partly organic
- D21H 19/44 . . characterised by the other ingredients, e.g. the binder or dispersing agent
- D21H 19/46 . . . Non-macromolecular organic compounds
- D21H 19/48 . . . . Diolefins, e.g. butadiene; Aromatic vinyl monomers, e.g. styrene; Polymerisable unsaturated acids or derivatives thereof, e.g. acrylic acid
- D21H 19/50 . . . Proteins
- D21H 19/52 . . . Cellulose; Derivatives thereof
- D21H 19/54 . . . Starch
- D21H 19/56 . . . Macromolecular organic compounds or oligomers thereof obtained by reactions only involving carbon-to-carbon unsaturated bonds
- D21H 19/58 . . . . Polymers or oligomers of diolefins, aromatic vinyl monomers or unsaturated acids or derivatives thereof
- D21H 19/60 . . . . Polyalkenylalcohols; Polyalkenylethers; Polyalkenylesters
- D21H 19/62 . . . Macromolecular organic compounds or oligomers thereof obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
- D21H 19/64 . . . Inorganic compounds
- D21H 19/66 . Coatings characterised by a special visual effect, e.g. patterned, textured ([marbled paper D21H 27/04](#))
- D21H 19/68 . . uneven, broken, discontinuous
- D21H 19/70 . . with internal voids, e.g. bubble coatings

- D21H 19/72 . Coated paper characterised by the paper substrate
- D21H 19/74 . . the substrate having an uneven surface, e.g. crêped or corrugated paper
- D21H 19/76 . . the substrate having specific absorbent properties
- D21H 19/78 . . . being substantially impervious to the coating
  
- D21H 19/80 . Paper comprising more than one coating ([D21H 19/02](#) takes precedence)
- D21H 19/82 . . superposed {([D21H 19/84](#) takes precedence)}
- D21H 19/822 . . . {two superposed coatings, both being pigmented}
- D21H 19/824 . . . {two superposed coatings, both being non-pigmented}
- D21H 19/826 . . . {two superposed coatings, the first applied being pigmented and the second applied being non-pigmented}
- D21H 19/828 . . . {two superposed coatings, the first applied being non-pigmented and the second applied being pigmented}
- D21H 19/84 . . on both sides of the substrate

**D21H 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**

#### **NOTE**

In groups [D21H 21/00](#) to [D21H 21/12](#), it is desirable to classify the individual constituents of the fibres used in the pulp or the paper, the non-fibrous material added to the pulp or the impregnating or coating material, using Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 17/00](#).

- D21H 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](#))
- D21H 21/04 . . Slime-control agents
  
- D21H 21/06 . Paper forming aids
- D21H 21/08 . . Dispersing agents for fibres
- D21H 21/10 . . Retention agents or drainage improvers
- D21H 21/12 . . Defoamers
  
- D21H 21/14 . characterised by function or properties in or on the paper ([D21H 19/66](#), [D21H 27/02](#) take precedence)

#### **NOTE**

In groups [D21H 21/14](#) to [D21H 21/56](#), it is desirable to classify the individual constituents of the fibres used in the pulp or the paper, the non-fibrous material added to the pulp or the impregnating or coating material, using Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 19/00](#).

- D21H 21/143 . . {Agents preventing ageing of paper, e.g. radiation absorbing substances}
- D21H 21/146 . . {Crêping adhesives}
- D21H 21/16 . . Sizing or water-repelling agents

- D21H 21/18 . . Reinforcing agents
- D21H 21/20 . . . Wet strength agents
- D21H 21/22 . . Agents rendering paper porous, absorbent or bulky
- D21H 21/24 . . . Surfactants
- D21H 21/26 . . Agents rendering paper transparent or translucent
- D21H 21/28 . . Colorants; { **Pigments or opacifying agents**}
- D21H 21/285 . . . {**insoluble**}
- D21H 21/30 . . Luminescent or fluorescent substances, e.g. for optical bleaching ([D21H 21/40 takes precedence](#))
- D21H 21/32 . . Bleaching agents ([bleaching cellulose pulp D21C 9/10](#))
- D21H 21/34 . . Ignifugeants
- D21H 21/36 . . Biocidal agents, e.g. fungicidal, bactericidal, insecticidal agents
- D21H 21/38 . . Corrosion-inhibiting agents or anti-oxidants
- D21H 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](#); [securities or banknotes characterised by colour effects {B42D 15/00}](#); [testing paper currency or valuable papers for genuineness G07D 7/00](#))
- D21H 21/42 . . . Ribbons or strips ([filaments D21H 15/06](#))
- D21H 21/44 . . . Latent security elements, i.e. detectable or becoming apparent only by use of special verification or tampering devices or methods
- D21H 21/46 . . . . Elements suited for chemical verification or impeding chemical tampering, e.g. by use of eradicators
- D21H 21/48 . . . . Elements suited for physical verification, e.g. by irradiation
- D21H 21/50 . characterised by form ([D21H 19/66](#), [D21H 21/42](#), [D21H 27/02](#) take precedence)
- D21H 21/52 . . Additives of definite length or shape
- D21H 21/54 . . . being spherical, e.g. microcapsules, beads
- D21H 21/56 . . Foam

**D21H 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**

In groups [D21H 23/00](#) to [D21H 23/20](#), it is desirable to classify the individual constituents of the fibres used in the pulp or the paper, the non-fibrous material added to the pulp or the impregnating or coating material, as Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 17/00](#) or [D21H 21/00](#).

Processes or apparatus used for addition to the paper during its manufacture, i.e. on-machine, are classified in groups [D21H 23/24](#) to [D21H 23/28](#) if they are specially influenced by, or specially adapted to the paper-making process.

- D21H 23/02 . characterised by the manner in which substances are added
- D21H 23/04 . . Addition to the pulp; After-treatment of added substances in the pulp
- D21H 23/06 . . . Controlling the addition

D21H 23/08	....	by measuring pulp properties, e.g. zeta potential, pH
D21H 23/10	.....	at least two kinds of compounds being added
D21H 23/12	....	by measuring properties of the formed web
D21H 23/14	....	by selecting point of addition or time of contact between components
D21H 23/16	.....	Addition before or during pulp beating or refining ( <a href="#">disintegrating fibrous raw materials in mills in the presence of chemical agents D21B 1/16</a> ; <a href="#">methods of beating D21D 1/02</a> ; <a href="#">methods of refining D21D 1/20</a> )
D21H 23/18	.....	Addition at a location where shear forces are avoided before sheet-forming, e.g. after pulp beating or refining
D21H 23/20	...	Apparatus therefor
D21H 23/22	..	Addition to the formed paper

**NOTE**

In groups [D21H 23/22](#) to [D21H 23/78](#), it is desirable to classify the individual constituents of the fibres used in the pulp or the paper, the non-fibrous material added to the pulp or the impregnating or coating material, using Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 21/00](#).

D21H 23/24	...	during paper manufacture
D21H 23/26	....	by selecting point of addition or moisture content of the paper
D21H 23/28	.....	Addition before the dryer section, e.g. at the wet end or press section
D21H 23/30	...	Pretreatment of the paper ( <a href="#">D21H 23/70</a> , <a href="#">D21H 23/76 take precedence</a> )
D21H 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 ( <a href="#">D21H 23/66 takes precedence</a> ; <a href="#">removing excess material D21H 25/08</a> )
D21H 23/34	....	Knife or blade type coaters
D21H 23/36	.....	Knife or blade forming part of the fluid reservoir, e.g. puddle-type trailing blade {or <a href="#">short-dwell coaters</a> }
D21H 23/38	.....	the fluid material being applied with a special device, e.g. with a roll in a flooded-nip inverted blade coater
D21H 23/40	....	only one side of the paper being in contact with the material ( <a href="#">D21H 23/34 takes precedence</a> )
D21H 23/42	....	Paper being at least partly surrounded by the material on both sides ( <a href="#">D21H 23/34 takes precedence</a> )
D21H 23/44	.....	Treatment with a gas or vapour
D21H 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 ( <a href="#">D21H 23/66 takes precedence</a> )
D21H 23/48	....	Curtain coaters
D21H 23/50	...	Spraying or projecting ( <a href="#">D21H 23/44</a> , <a href="#">D21H 23/66 take precedence</a> )
D21H 23/52	...	by contacting paper with a device carrying the material ( <a href="#">D21H 23/32</a> , <a href="#">D21H 23/46</a> , <a href="#">D21H 23/66 take precedence</a> )
D21H 23/54	....	Rubbing devices, e.g. brush, pad, felt
D21H 23/56	....	Rolls ( <a href="#">D21H 23/38 takes precedence</a> )
D21H 23/58	.....	Details thereof, e.g. surface characteristics, peripheral speed
D21H 23/60	.....	the material on the applicator roll being subjected to a particular

- treatment before applying to the paper ([D21H 23/64](#) takes precedence)
- [D21H 23/62](#) . . . . . Reverse roll coating, i.e. applicator roll surface moving in direction opposite to that of the paper
- [D21H 23/64](#) . . . . the material being non-fluent at the moment of transfer, e.g. in form of preformed, at least partially hardened coating
- [D21H 23/66](#) . . . Treating discontinuous paper, e.g. sheets, blanks, rolls
- [D21H 23/68](#) . . . . whereby the paper moves continuously
- [D21H 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
- [D21H 23/72](#) . . . . Plural serial stages only
- [D21H 23/74](#) . . . . Apparatus permitting switching from one technique to another
- [D21H 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)
- [D21H 23/765](#) . . {Addition of all compounds to the pulp}
- [D21H 23/78](#) . Controlling or regulating not limited to any particular process or apparatus
- [D21H 25/00](#) After-treatment of paper not provided for in groups [D21H 17/00](#) to [D21H 23/00](#)**
- NOTE**
- In this group, it is desirable to classify the individual constituents of the fibres used in the pulp or the paper, the non-fibrous material added to the pulp or the impregnating or coating material, using Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 21/00](#).
- [D21H 25/005](#) . {Mechanical treatment ([D21H 25/08](#), [D21H 25/18](#) take precedence)}
- [D21H 25/02](#) . Chemical or biochemical treatment ([D21H 25/18](#) takes precedence)
- [D21H 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)
- [D21H 25/08](#) . Rearranging applied substances, e.g. metering, smoothing; Removing excess material
- [D21H 25/10](#) . . with blades
- [D21H 25/12](#) . . with an essentially cylindrical body, e.g. roll or rod
- [D21H 25/14](#) . . . the body being a casting drum, {a heated roll or a calender}
- [D21H 25/16](#) . . with a blast of vapour or gas, e.g. air knife
- [D21H 25/18](#) . of old paper as in books, documents, e.g. restoring
- [D21H 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.

In this group, it is desirable to classify the individual constituents using Combination Sets with symbols chosen from groups [D21H 11/00](#) to [D21H 25/00](#).

- D21H 27/001 . {Release paper}
- D21H 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](#))} { WARNING Not complete. Documents presently classified elsewhere, mainly in D21F and D21H, need reclassification to this group or its subgroups}
- D21H 27/004 . . { charaterised by specific parameters ([D21H 27/008](#) takes precedence)}
- D21H 27/005 . . . { relating to physical or mechanical properties, e.g. tensile strength, stretch, softness}
- D21H 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}
- D21H 27/008 . . { charaterised 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)}
- D21H 27/02 . Patterned paper (patterned coatings [D21H 19/66](#); embossing [B31F 1/07](#); prepared on the paper-making machines [D21F 11/00](#))
- D21H 27/04 . . marbled
- D21H 27/06 . Vegetable or imitation parchment; Glassine paper
- D21H 27/08 . Filter paper (self-supporting filtering material [B01D 39/14](#); making on paper-making machines [D21F 11/14](#))
- D21H 27/10 . Packing paper (packaging materials of special type or form [B65D 65/38](#))
- D21H 27/14 . Paper having stable form or dimension; Curl-resistant paper (anticoil photographic support [G03C 1/81](#))
- D21H 27/16 . Pure paper, i.e. paper lacking or having low content of contaminants (after-treatment of cellulose pulp [D21C 9/00](#))
- D21H 27/18 . Paper- or board-based structures for surface covering
- D21H 27/20 . . Flexible structures being applied by the user, e.g. wallpaper (printed wallpapers [B41M 3/18](#); paperhanging [B44C 7/00](#); pregummed wallpaper [C09J 7/04](#))
- D21H 27/22 . . Structures being applied on the surface by special manufacturing processes, e.g. in presses

- D21H 27/24 . . . characterised by the surface to be covered being phenolic-resin paper laminates, vulcan fibre or similar cellulosic fibreboards
- D21H 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](#))
- D21H 27/28 . . . . treated to obtain specific resistance properties, e.g. against wear or weather ([water-repelling agents D21H 21/16](#))
- D21H 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](#)

- D21H 27/32 . . with materials applied between the sheets ([attaching together paper or cardboard sheets B31F 5/00](#); [adhesives C09J](#))
- D21H 27/34 . . . Continuous materials, e.g. filaments, sheets, nets
- D21H 27/36 . . . . Films made from synthetic macromolecular compounds
- D21H 27/38 . . at least one of the sheets having a fibrous composition differing from that of other sheets
- D21H 27/40 . . at least one of the sheets being non-planar, e.g. crêped ([crêping or corrugating paper B31F](#))
- D21H 27/42 . . comprising dry-laid paper