PAPER

D21 PAPER-MAKING; PRODUCTION OF CELLULOSE

D21B FIBROUS RAW MATERIALS OR THEIR MECHANICAL TREATMENT

1/00 **Fibrous raw materials or their mechanical treatment** (beaters D21D 1/00)
1/02 . Pretreatment of the raw materials by physical or chemical means (removal of bark B27L)
1/04 . by dividing raw materials into small particles, e.g. fibres (breaking-up or cutting wood or the like by dry methods B27L; disintegrating peat C10F 7/02; obtaining fibres mechanically for spinning from rags, peat, or the like D01B)
1/06 . . by dry methods
1/08 . . . the raw material being waste paper (chemical part D21C 5/02); the raw material being rags
1/10 . . . . by cutting actions
1/12 . . by wet methods, by the use of steam
1/14 . . . Disintegrating in mills (in general B02C)
1/16 . . . . in the presence of chemical agents
1/18 . . . . in magazine-type machines
1/20 . . . . . with chain feed
1/22 . . . . . with screw feed
1/24 . . . . . of the pocket type
1/26 . . . . Driving or feeding arrangements
1/28 . . . . Dressers for mill stones, combined with the mill
1/30 . . . Defibrating by other means
1/32 . . . . of waste paper
1/34 . . . . Kneading or mixing; Pulpers
1/36 . . . . Explosive disintegration by sudden pressure reduction
1/38 . Conserving the finely-divided cellulosic material

D21C PRODUCTION OF CELLULOSE BY REMOVING NON-CELLULOSE SUBSTANCES FROM CELLULOSE-CONTAINING MATERIALS; REGENERATION OF PULPING LIQUORS; APPARATUS THEREFOR

Note

Processes using enzymes or micro-organisms in order to:
(i) liberate, separate or purify a pre-existing compound or composition, or to
(ii) treat textiles or clean solid surfaces of materials
are further classified in subclass C12S. **[5]**

Subclass index

1/00 **Pretreatment of the finely-divided materials before digesting** (of waste paper D21C 5/02)
1/02 . with water or steam
1/04 . with acid reacting compounds
1/06 . with alkaline reacting compounds
1/08 . with oxygen-generating compounds
1/10 . Physical methods for facilitating impregnation

3/00 **Pulping cellulose-containing materials** (digesters D21C 7/00)
3/02 . with inorganic bases or alkaline reacting compounds, e.g. sulfate processes
3/04 . with acids, acid salts, or acid anhydrides
3/06 . . sulfur dioxide; sulfurous acid; bisulfites
3/08 . . . calcium bisulfite
3/10 . . . magnesium bisulfite
3/12 . . . sodium bisulfite
3/14 . . . ammonium bisulfite
3/16 . . nitrogen oxides; nitric acid
3/18 . with halogens or halogen-generating compounds (bleaching cellulose pulp D21C 9/12)
3/20 . with organic solvents
3/22 . Other features of pulping processes
3/24 . . Continuous processes
3/26 . . Multi-stage processes
3/28 . . Prevention of foam

5/00 **Other processes for obtaining cellulose, e.g. cooking cotton linters** (obtaining fibres for spinning D01C)
5/02 . Working-up waste paper (mechanical part D21B 1/08, D21B 1/32)

7/00 **Digesters**
7/02 . Rotary digesters
7/04 . Linings
7/06 . Feeding devices
7/08 . Discharge devices

7/10 . Heating devices
7/12 . Devices for regulating or controlling
7/14 . Means for circulating the lye
7/16 . Safety devices

9/00 After-treatment of cellulose pulp, e.g. of wood pulp, or cotton linters
9/02 . Washing
9/04 . . in diffusers
9/06 . . in filters
9/08 . Removal of fats, resins, pitch, or waxes
9/10 . Bleaching
9/12 . . with halogens or halogen-containing compounds (D21C 9/16 takes precedence) **[4]**
9/14 . . . with ClO_2 or chlorites
9/147 . . with oxygen or its allotropic modifications (D21C 9/16 takes precedence) **[4]**
9/153 . . . with ozone **[4]**
9/16 . . with per compounds
9/18 . De-watering (de-watering in general F26B)

11/00 Regeneration of pulp liquors
11/02 . of sulfite lye
11/04 . of alkali lye
11/06 . Treatment of pulp gases; Recovery of the heat content of the gases
11/08 . . Deodorisation
11/10 . Concentrating spent liquor by evaporation (evaporators B01D)
11/12 . Combustion of pulp liquors
11/14 . . Wet combustion

D21D TREATMENT OF THE MATERIALS BEFORE PASSING TO THE PAPER-MAKING MACHINE [5]

1/00 Methods of beating or refining; **Beaters of the Hollander type** (knotter screens D21F)
1/02 . Methods of beating; Beaters of the Hollander type
1/04 . . Beater rolls or bars
1/06 . . Bed plates
1/08 . . Beaters with means for driving the pulp quickly
1/10 . . Beaters with means for regulating the pressure between the beater roll and the bed plate
1/12 . . Beaters with means for continuous pulp discharge
1/14 . . Beaters with one beater roll and with vertical stuff circulation canal
1/16 . . Beaters with means for returning the pulp over the head of the beater roll
1/18 . . Beaters with two or more beater rolls
1/20 . Methods of refining
1/22 . . Jordans
1/24 . . . Jordan rolls
1/26 . . . Jordan bed plates
1/28 . . Ball or rod mills
1/30 . . Disc mills
1/32 . . Hammer mills
1/34 . . Other mills or refiners
1/36 . . . with vertical shaft
1/38 . . . with horizontal shaft
1/40 . . Washing the fibres

5/00 Purification of the pulp suspension by mechanical means; **Apparatus therefor** (centrifuges, cyclones B04)
5/02 . Straining or screening the pulp
5/04 . . Flat screens
5/06 . . Rotary screen-drums
5/08 . . . combined with a rocking movement
5/10 . . . . of the tank
5/12 . . . . of the screen
5/14 . . . . of the tank and the screen
5/16 . . Cylinders and plates for screens
5/18 . with the aid of centrifugal force
5/20 . . in apparatus with a horizontal axis
5/22 . . in apparatus with a vertical axis
5/24 . . in cyclones
5/26 . De-aeration of paper stock
5/28 . Tanks for storing or agitating pulp

99/00 Subject matter not provided for in other groups of this subclass [8]

D21F PAPER-MAKING MACHINES; METHODS OF PRODUCING PAPER THEREON

Subclass index

1/00 Wet end of machines for making continuous webs of paper
1/02 . Head boxes of Fourdrinier machines
1/04 . Head boxes of cylinder machines
1/06 . Regulating pulp flow
1/08 . Regulating consistency
1/10 . Wire-cloths
1/12 . . Seams thereof

1/14 . . . welded
1/16 . . . sewn
1/18 . Shaking-apparatus for wire-cloths and associated parts
1/20 . . in Fourdrinier machines
1/22 . . in cylinder machines
1/24 . Tilting, raising, or lowering mechanisms for wire-cloths
1/26 . . in Fourdrinier machines
1/28 . . in cylinder machines
1/30 . Protecting wire-cloths from mechanical damage
1/32 . Washing wire-cloths or felts
1/34 . Construction or arrangement of spraying pipes
1/36 . Guiding mechanisms
1/38 . . Pads
1/40 . . Rolls
1/42 . . Jets
1/44 . Watermarking devices
1/46 . . Dandy rolls
1/48 . Suction apparatus (suction rolls D21F 3/10)
1/50 . . Suction boxes with rolls
1/52 . . Suction boxes without rolls
1/54 . Skimming devices, e.g. froth ledges
1/56 . Deckle frame arrangements
1/58 . Deckle straps
1/60 . Cylinder moulds
1/62 . Sand traps
1/64 . Magnetic separators
1/66 . Pulp catching, de-watering, or recovering; Re-use of pulp-water
1/68 . . using hydrocyclones
1/70 . . by flotation
1/72 . . using funnels
1/74 . . using cylinders
1/76 . . . with suction
1/78 . . . with pressure
1/80 . . using endless screening belts
1/82 . . adding fibre agglomeration compositions

2/00 Transferring continuous webs from wet ends to press sections

3/00 Press section of machines for making continuous webs of paper

3/02 . Wet presses
3/04 . . Arrangements thereof
3/06 . . Means for regulating the pressure
3/08 . . Pressure rolls
3/10 . . Suction rolls, e.g. couch rolls

5/00 Dryer section of machines for making continuous webs of paper

5/02 . Drying on cylinders
5/04 . . on two or more drying cylinders
5/06 . . Regulating temperature
5/08 . . Arrangement of steam points in the cylinders
5/10 . . Removing condensate from the interior of the cylinders
5/12 . Festoon drying
5/14 . Drying webs by applying vacuum
5/16 . Drying webs by electrical heating
5/18 . Drying webs by hot air
5/20 . Waste heat recovery

7/00 Other details of machines for making continuous webs of paper

7/02 . Mechanical driving arrangements
7/04 . Paper-break control devices
7/06 . Indicating or regulating the thickness of the layer; Signal devices
7/08 . Felts
7/10 . . Seams thereof
7/12 . . Drying

9/00 Complete machines for making continuous webs of paper

9/02 . of the Fourdrinier type
9/04 . of the cylinder type

11/00 Processes for making continuous lengths of paper, or of cardboard, or of wet web for fibreboard production, on paper-making machines

11/02 . of the Fourdrinier type
11/04 . . paper or board consisting of two or more layers
11/06 . of the cylinder type
11/08 . . paper or board consisting of two or more layers
11/10 . Making imitation mould-made paper
11/12 . Making corrugated paper or board
11/14 . Making cellulose wadding, filter- or blotting paper
11/16 . Making paper strips for spinning or twisting

13/00 Methods or apparatus for making discontinuous sheets of paper, pulpboard, or cardboard, or of wet web, for fibreboard production (making discontinuous sheets of board in moulds D21J; drying paper, pulpboard, or cardboard, in discontinuous-sheet form F26B)

13/02 . Making hand-made paper
13/04 . on cylinder board machines
13/06 . . Format rolls
13/08 . . . Automatic cut-off rolls
13/10 . using board presses
13/12 . . Platen presses

D21G CALENDERS; ACCESSORIES FOR PAPER-MAKING MACHINES (winders or rewinders for finished products, means for adjustment of wrinkles or lateral extensions B65H)

1/00 Calenders (if restricted to the treatment of particular materials, see the relevant place, e.g. B29C 43/24, D06); **Smoothing apparatus**

1/02 . Rolls; Their bearings (in general F16C 13/00)

3/00 Doctors

3/02 . for calenders
3/04 . for drying cylinders

5/00 Safety devices

7/00 Damping devices

9/00 Other accessories for paper-making machines

D21H PULP COMPOSITIONS; PREPARATION THEREOF NOT COVERED BY SUBCLASSES D21C, D21D; IMPREGNATING OR COATING OF PAPER; TREATMENT OF FINISHED PAPER NOT COVERED BY CLASS B31 OR SUBCLASS D21G; PAPER NOT OTHERWISE PROVIDED FOR [5]

(1) This subclass covers also pulp compositions for the preparation of fibreboard or other fibrous articles by wet processes. **[5]**

(2) In this subclass, the following terms are used with the meaning indicated:
- "pulp" means a dispersion 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; **[5]**
- "paper" means paper, cardboard or wet-laid non-woven fabrics.

(3) If a pulp composition or a paper, or a constituent thereof, is characterised by more than one feature provided for in this subclass, for example, by both the fibrous material and a coating or by both a colorant and a water-repelling agent, classification is made in all places providing for these features. **[8]**

(4) Processes using enzymes or micro-organisms in order to:
(i) liberate, separate or purify a pre-existing compound or composition, or to
(ii) treat textiles or clean solid surfaces of materials
are further classified in subclass C12S. **[5]**

Subclass index

Note

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. **[5]**

11/00 Pulp or paper, comprising cellulose or lignocellulose fibres of natural origin only [5]

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

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]**

13/02 . Synthetic cellulose fibres **[5]**
13/04 . . Cellulose ethers **[5]**
13/06 . . Cellulose esters **[5]**
13/08 . . from regenerated cellulose **[5]**
13/10 . Organic non-cellulose fibres **[5]**
13/12 . . from macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds **[5]**
13/14 . . . Polyalkenes, e.g. polystyrene **[5]**
13/16 . . . Polyalkenylalcohols; Polyalkenylethers; Polyalkenylesters **[5]**
13/18 . . . Polymers of unsaturated acids or derivatives thereof, e.g. polyacrylonitriles **[5]**
13/20 . . from macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[5]**
13/22 . . . Condensation polymers of aldehydes or ketones **[5]**
13/24 . . . Polyesters **[5]**
13/26 . . . Polyamides; Polyimides **[5]**
13/28 . . from natural polymers **[5]**
13/30 . . . Non-cellulose polysaccharides **[5]**
13/32 . . . . Alginate fibres **[5]**
13/34 . . . Protein fibres **[5]**
13/36 . Inorganic fibres or flakes **[5]**
13/38 . . siliceous **[5]**
13/40 . . . vitreous, e.g. mineral wool, glass fibres **[5]**
13/42 . . . Asbestos **[5]**
13/44 . . . Flakes, e.g. mica, vermiculite **[5]**
13/46 . . Non-siliceous fibres, e.g. from metal oxides **[5]**
13/48 . . . Metal or metallised fibres **[5]**
13/50 . . . Carbon fibres **[5]**

15/00 Pulp or paper, comprising fibres or web-forming material characterised by features other than their chemical constitution [5]

15/02 . characterised by configuration **[5]**
15/04 . . crimped, kinked, curled or twisted fibres **[5]**
15/06 . . Long fibres, i.e. fibres exceeding the upper length limit of conventional paper-making fibres; Filaments **[5]**
15/08 . . Flakes (D21H 13/44 takes precedence) **[5]**
15/10 . . Composite fibres **[5]**
15/12 . . . partly organic, partly inorganic **[5]**

17/00 Non-fibrous material added to the pulp, characterised by its constitution; Paper-impregnating material characterised by its constitution [5]

(1) In groups D21H 17/01 to D21H 17/63, in the absence of an indication to the contrary, a material is classified in the last appropriate place. **[8]**

(2) A mixture of two or more materials is classified in the last appropriate place in groups D21H 17/01 to D21H 17/63 that provides for at least one of these materials. **[8]**

(3) Any part of a mixture which is not identified by the classification according to note (2), and which itself is determined to be novel and non-obvious, must also be classified in the last appropriate place in groups D21H 17/01 to D21H 17/63. The part can be either a single material or a mixture in itself. **[8]**

(4) A part of a mixture which is not identified by the classification according to note (2) or (3), and which is considered to represent information of interest for search, may also be classified in the last appropriate place in groups D21H 17/01 to D21H 17/63. This can for example be the case when it is considered of interest to enable searching of mixtures using a combination of classification symbols. Such non-obligatory classification should be given as "additional information". **[8]**

17/01 . Waste products, e.g. sludge **[5]**
17/02 . Material of vegetable origin (proteins D21H 17/22; lignins D21H 17/23; polysaccharides D21H 17/24; rosin D21H 17/62) **[5]**
17/03 . Non-macromolecular organic compounds **[5]**
17/04 . . Hydrocarbons **[5]**
17/05 . . containing elements other than carbon and hydrogen only **[5]**
17/06 . . . Alcohols; Phenols; Ethers; Aldehydes; Ketones; Acetals; Ketals **[5]**
17/07 . . . Nitrogen-containing compounds **[5]**
17/08 . . . . Isocyanates **[5]**
17/09 . . . Sulfur-containing compounds **[5]**
17/10 . . . Phosphorus-containing compounds **[5]**
17/11 . . . Halides **[5]**
17/12 . . . Organo-metallic compounds **[5]**
17/13 . . . Silicon-containing compounds **[5]**
17/14 . . . Carboxylic acids; Derivatives thereof **[5]**
17/15 . . . . Polycarboxylic acids, e.g. maleic acid **[5]**
17/16 . . . . . Addition products thereof with hydrocarbons **[5]**
17/17 . . . Ketenes, e.g. ketene dimers **[5]**
17/18 . . . forming new compounds in situ, e.g. within the pulp or paper, by chemical reaction with itself, or other added substances **[5]**
17/19 . . . . by reactions only involving carbon-to-carbon unsaturated bonds **[5]**
17/20 . Macromolecular organic compounds **[5]**
17/21 . . of natural origin; Derivatives thereof **[5]**
17/22 . . . Proteins **[5]**
17/23 . . . Lignins **[5]**
17/24 . . . Polysaccharides **[5]**
17/25 . . . . Cellulose **[5]**
17/26 . . . . . Ethers thereof **[5]**
17/27 . . . . . Esters thereof **[5]**
17/28 . . . . Starch **[5]**
17/29 . . . . . cationic **[5]**
17/30 . . . . Alginic acid or alginates **[5]**
17/31 . . . . Gums **[5]**
17/32 . . . . . Guar gum **[5]**
17/33 . . Synthetic macromolecular compounds **[5]**
17/34 . . . obtained by reactions only involving carbon-to-carbon unsaturated bonds **[5]**
17/35 . . . . Polyalkenes, e.g. polystyrene **[5]**
17/36 . . . . Polyalkenylalcohols; Polyalkenylethers; Polyalkenylesters **[5]**
17/37 . . . . Polymers of unsaturated acids or derivatives thereof, e.g. polyacrylates **[5]**
17/38 . . . . containing crosslinkable groups **[5]**
17/39 . . . . . forming ether crosslinkages, e.g. alkylol groups **[5]**
17/40 . . . . . unsaturated **[5]**
17/41 . . . . containing ionic groups **[5]**
17/42 . . . . . anionic **[5]**
17/43 . . . . . Carboxyl groups or derivatives thereof **[5]**
17/44 . . . . . cationic **[5]**
17/45 . . . . . Nitrogen-containing groups **[5]**
17/46 . . . obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[5]**
17/47 . . . . Condensation polymers of aldehydes or ketones **[5]**
17/48 . . . . . with phenols **[5]**
17/49 . . . . . with compounds containing hydrogen bound to nitrogen **[5]**
17/50 . . . . . Acyclic compounds **[5]**
17/51 . . . . . Triazines, e.g. melamine **[5]**
17/52 . . . . Epoxy resins **[5]**
17/53 . . . . Polyethers; Polyesters **[5]**
17/54 . . . . obtained by reactions forming in the main chain of the macromolecule a linkage containing nitrogen **[5]**
17/55 . . . . . Polyamides; Polyaminoamides; Polyester-amides **[5]**
17/56 . . . . . Polyamines; Polyimines; Polyester-imides **[5]**
17/57 . . . . . Polyureas; Polyurethanes **[5]**
17/58 . . . . obtained by reactions forming in the main chain of the macromolecule a linkage containing sulfur **[5]**
17/59 . . . . obtained by reactions forming in the main chain of the macromolecule a linkage containing silicon **[5]**
17/60 . Waxes **[5]**
17/61 . Bitumen **[5]**
17/62 . Rosin; Derivatives thereof **[5]**
17/63 . Inorganic compounds **[5]**
17/64 . . Alkaline compounds **[5]**
17/65 . . Acid compounds **[5]**
17/66 . . Salts, e.g. alums **[5]**
17/67 . . Water-insoluble compounds, e.g. fillers, pigments **[5]**
17/68 . . . siliceous, e.g. clays **[5]**
17/69 . . . modified, e.g. by association with other compositions prior to incorporation in the pulp or paper **[5]**
17/70 . . forming new compounds in situ, e.g. within the pulp or paper, by chemical reaction with other substances added separately **[5]**

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) **[5]**

19/02 . Metal coatings (D21H 19/66 takes precedence) **[5]**
19/04 . . applied as foil **[5]**
19/06 . . applied as liquid or powder **[5]**
19/08 . . applied as vapour, e.g. in vacuum **[5]**
19/10 . Coatings without pigments (D21H 19/66 takes precedence) **[5]**
19/12 . . applied as a solution using water as the only solvent, e.g. in the presence of acid or alkaline compounds **[5]**
19/14 . . applied in a form other than the aqueous solution defined in group D21H 19/12 **[5]**
19/16 . . . comprising curable or polymerisable compounds (D21H 19/24 takes precedence) **[5]**
19/18 . . . comprising waxes **[5]**
19/20 . . . comprising macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds **[5]**
19/22 . . . . Polyalkenes, e.g. polystyrene **[5]**
19/24 . . . comprising macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[5]**
19/26 . . . . Aminoplasts **[5]**
19/28 . . . . Polyesters **[5]**
19/30 . . . . Polyamides; Polyimides **[5]**
19/32 . . . . obtained by reactions forming a linkage containing silicon in the main chain of the macromolecule **[5]**
19/34 . . . comprising cellulose or derivatives thereof **[5]**
19/36 . Coatings with pigments (D21H 19/66 takes precedence; metal powder D21H 19/06) **[5]**
19/38 . . characterised by the pigments **[5]**
19/40 . . . siliceous, e.g. clays **[5]**
19/42 . . . at least partly organic **[5]**
19/44 . . characterised by the other ingredients, e.g. the binder or dispersing agent **[5]**
19/46 . . . Non-macromolecular organic compounds **[5]**
19/48 . . . . Diolefins, e.g. butadiene; Aromatic vinyl monomers, e.g. styrene; Polymerisable unsaturated acids or derivatives thereof, e.g. acrylic acid **[5]**
19/50 . . . Proteins **[5]**
19/52 . . . Cellulose; Derivatives thereof **[5]**
19/54 . . . Starch **[5]**
19/56 . . . Macromolecular organic compounds or oligomers thereof obtained by reactions only involving carbon-to-carbon unsaturated bonds **[5]**
19/58 . . . . Polymers or oligomers of diolefins, aromatic vinyl monomers or unsaturated acids or derivatives thereof **[5]**
19/60 . . . . Polyalkenylalcohols; Polyalkenylethers; Polyalkenylesters **[5]**
19/62 . . . Macromolecular organic compounds or oligomers thereof obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds **[5]**
19/64 . . . Inorganic compounds **[5]**
19/66 . Coatings characterised by a special visual effect, e.g. patterned, textured (marbled paper D21H 27/04) **[5]**
19/68 . . uneven, broken, discontinuous **[5]**
19/70 . . with internal voids, e.g. bubble coatings **[5]**
19/72 . Coated paper characterised by the paper substrate **[5]**
19/74 . . the substrate having an uneven surface, e.g. crêped or corrugated paper **[5]**
19/76 . . the substrate having specific absorbent properties **[5]**
19/78 . . . being substantially impervious to the coating **[5]**
19/80 . Paper comprising more than one coating (D21H 19/02 takes precedence) **[5]**
19/82 . . superposed **[5]**
19/84 . . on both sides of the substrate **[5]**

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 [5]**

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) **[5]**
21/04 . . Slime-control agents **[5]**
21/06 . Paper forming aids **[5]**
21/08 . . Dispersing agents for fibres **[5]**
21/10 . . Retention agents or drainage improvers **[5]**
21/12 . . Defoamers **[5]**
21/14 . characterised by function or properties in or on the paper (D21H 19/66, D21H 27/02 take precedence) **[5]**
21/16 . . Sizing or water-repelling agents **[5]**
21/18 . . Reinforcing agents **[5]**
21/20 . . . Wet strength agents **[5]**
21/22 . . Agents rendering paper porous, absorbent or bulky **[5]**
21/24 . . . Surfactants **[5]**
21/26 . . Agents rendering paper transparent or translucent **[5]**
21/28 . . Colorants **[5]**
21/30 . . Luminescent or fluorescent substances, e.g. for optical bleaching (D21H 21/40 takes precedence) **[5]**
21/32 . . Bleaching agents (bleaching cellulose pulp D21C 9/10) **[5]**
21/34 . . Ignifugeants **[5]**
21/36 . . Biocidal agents, e.g. fungicidal, bactericidal, insecticidal agents **[5]**
21/38 . . Corrosion-inhibiting agents or anti-oxidants **[5]**
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 B44F 1/12; testing paper currency or valuable papers for genuineness G07D 7/00) **[5]**
21/42 . . . Ribbons or strips (filaments D21H 15/06) **[5]**
21/44 . . . Latent security elements, i.e. detectable or becoming apparent only by use of special verification or tampering devices or methods **[5]**
21/46 . . . . Elements suited for chemical verification or impeding chemical tampering, e.g. by use of eradicators **[5]**
21/48 . . . . Elements suited for physical verification, e.g. by irradiation **[5]**
21/50 . characterised by form (D21H 19/66, D21H 21/42, D21H 27/02 take precedence) **[5]**
21/52 . . Additives of definite length or shape **[5]**

21/54 . . . being spherical, e.g. microcapsules, beads **[5]**
21/56 . . Foam **[5]**

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) **[5]**

23/02 . characterised by the manner in which substances are added **[5]**
23/04 . . Addition to the pulp; After-treatment of added substances in the pulp **[5]**
23/06 . . . Controlling the addition **[5]**
23/08 . . . . by measuring pulp properties, e.g. zeta potential, pH **[5]**
23/10 . . . . . at least two kinds of compounds being added **[5]**
23/12 . . . . by measuring properties of the formed web **[5]**
23/14 . . . . by selecting point of addition or time of contact between components **[5]**
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) **[5]**
23/18 . . . . . Addition at a location where shear forces are avoided before sheet-forming, e.g. after pulp beating or refining **[5]**
23/20 . . . Apparatus therefor **[5]**
23/22 . . Addition to the formed paper **[5]**
23/24 . . . during paper manufacture **[5]**

Note

Processes or apparatus used for addition to the paper during its manufacture, i.e. on-machine, are classified in group D21H 23/24 if they are specially influenced by, or specially adapted to, the paper-making process. **[5]**

23/26 . . . . by selecting point of addition or moisture content of the paper **[5]**
23/28 . . . . . Addition before the dryer section, e.g. at the wet end or press section **[5]**
23/30 . . . Pretreatment of the paper (D21H 23/70, D21H 23/76 take precedence) **[5]**
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) **[5]**
23/34 . . . . Knife or blade type coaters **[5]**
23/36 . . . . . Knife or blade forming part of the fluid reservoir, e.g. puddle-type trailing blade **[5]**
23/38 . . . . . the fluid material being applied with a special device, e.g. with a roll in a flooded-nip inverted blade coater **[5]**
23/40 . . . . only one side of the paper being in contact with the material (D21H 23/34 takes precedence) **[5]**
23/42 . . . . Paper being at least partly surrounded by the material on both sides (D21H 23/34 takes precedence) **[5]**
23/44 . . . . . Treatment with a gas or vapour **[5]**
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) **[5]**
23/48 . . . . Curtain coaters **[5]**
23/50 . . . Spraying or projecting (D21H 23/44, D21H 23/66 take precedence) **[5]**
23/52 . . . by contacting paper with a device carrying the material (D21H 23/32, D21H 23/46, D21H 23/66 take precedence) **[5]**
23/54 . . . . Rubbing devices, e.g. brush, pad, felt **[5]**
23/56 . . . . Rolls (D21H 23/38 takes precedence) **[5]**
23/58 . . . . . Details thereof, e.g. surface characteristics, peripheral speed **[5]**
23/60 . . . . . the material on the applicator roll being subjected to a particular treatment before applying to the paper (D21H 23/64 takes precedence) **[5]**
23/62 . . . . . Reverse roll coating, i.e. applicator roll surface moving in direction opposite to that of the paper **[5]**
23/64 . . . . the material being non-fluent at the moment of transfer, e.g. in form of preformed, at least partially hardened coating **[5]**
23/66 . . . Treating discontinuous paper, e.g. sheets, blanks, rolls **[5]**
23/68 . . . . whereby the paper moves continuously **[5]**
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 **[5]**
23/72 . . . . Plural serial stages only **[5]**
23/74 . . . . Apparatus permitting switching from one technique to another **[5]**
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) **[5]**
23/78 . Controlling or regulating not limited to any particular process or apparatus **[5]**

25/00 After-treatment of paper not provided for in groups D21H 17/00 to D21H 23/00 [5]

25/02 . Chemical or biochemical treatment (D21H 25/18 takes precedence) **[5]**
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) **[5]**
25/06 . . of impregnated or coated paper (D21H 25/08 takes precedence) **[5]**
25/08 . Rearranging applied substances, e.g. metering, smoothing; Removing excess material **[5]**
25/10 . . with blades **[5]**
25/12 . . with an essentially cylindrical body, e.g. roll or rod **[5]**
25/14 . . . the body being a casting drum **[5]**
25/16 . . with a blast of vapour or gas, e.g. air knife **[5]**
25/18 . of old paper as in books, documents, e.g. restoring **[5]**

27/00 Special paper not otherwise provided for, e.g. made by multi-step processes [5]

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. **[5]**

27/02 . Patterned paper (patterned coatings D21H 19/66; embossing B31F 1/07; prepared on the paper-making machines D21F 11/00) **[5]**
27/04 . . marbled **[5]**
27/06 . Vegetable or imitation parchment; Glassine paper **[5]**
27/08 . Filter paper (self-supporting filtering material B01D 39/14; making on paper-making machines D21F 11/14) **[5]**
27/10 . Packing paper (packaging materials of special type or form B65D 65/38) **[5]**
27/12 . Electrically-insulating paper **[5]**
27/14 . Paper having stable form or dimension; Curl-resistant paper (anticoil photographic support G03C 1/81) **[5]**
27/16 . Pure paper, i.e. paper lacking or having low content of contaminants (after-treatment of cellulose pulp D21C 9/00) **[5]**
27/18 . Paper- or board-based structures for surface covering **[5]**
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) **[5]**
27/22 . . Structures being applied on the surface by special manufacturing processes, e.g. in presses **[5]**
27/24 . . . characterised by the surface to be covered being phenolic-resin paper laminates, vulcan fibre or similar cellulosic fibreboards **[5]**
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) **[5]**
27/28 . . . . treated to obtain specific resistance properties, e.g. against wear or weather (water-repelling agents D21H 21/16) **[5]**
27/30 . Multi-ply (for surface covering D21H 27/18; making on paper-making machines D21F 9/00, D21F 11/00) **[5]**

Note

Layered products classified in this group are also classified in subclass B32B. **[5]**

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

D21J FIBREBOARD; **MANUFACTURE OF ARTICLES FROM CELLULOSIC FIBROUS SUSPENSIONS OR FROM PAPIER-MÂCHÉ** (manufacture of articles by dry processes B27N)

1/00 Fibreboard (preparation of pulp compositions or addition of chemical agents D21B, D21C, D21H; formation of the wet web D21F)
1/02 . Cutting, e.g. using wet saws
1/04 . Pressing
1/06 . Drying
1/08 . Impregnated or coated fibreboard
1/10 . After-treatment
1/12 . . Hardening
1/14 . . Conditioning
1/16 . Special fibreboard
1/18 . . Hardboard
1/20 . . Insulating board

3/00 Manufacture of articles by pressing wet fibre pulp, or papier-mâché, between moulds
3/02 . of rings
3/04 . of tubes
3/06 . of stoppers
3/08 . of bobbins
3/10 . of hollow bodies
3/12 . of sheets; of diaphragms

5/00 Manufacture of hollow articles by transferring sheets, produced from fibres suspensions or papier-mâché by suction on wire-net moulds, to couch moulds

7/00 Manufacture of hollow articles from fibre suspensions or papier-mâché by deposition of fibres in or on a wire-net mould