

# CPC COOPERATIVE PATENT CLASSIFICATION

## C CHEMISTRY; METALLURGY

(NOTES omitted)

### CHEMISTRY

## C08 ORGANIC MACROMOLECULAR COMPOUNDS; THEIR PREPARATION OR CHEMICAL WORKING-UP; COMPOSITIONS BASED THEREON

### C08B POLYSACCHARIDES; DERIVATIVES THEREOF (polysaccharides containing less than six saccharide radicals attached to each other by glycosidic linkages [C07H](#); fermentation or enzyme-using processes [C12P 19/00](#); sugar industry [C13](#); production of cellulose [D21](#))

#### WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
 

|                            |            |   |
|----------------------------|------------|---|
| <a href="#">C08B 37/02</a> | covered by | <a href="#">C08B 37/0021</a>  |
| <a href="#">C08B 37/04</a> | covered by | <a href="#">C08B 37/0084</a>  |
| <a href="#">C08B 37/06</a> | covered by | <a href="#">C08B 37/0045</a>  |
| <a href="#">C08B 37/08</a> | covered by | <a href="#">C08B 37/003</a> (chitin), <a href="#">C08B 37/0072</a> (hyaluronic acid) and <a href="#">C08B 37/0069</a> (chondroitin sulfate) |
| <a href="#">C08B 37/10</a> | covered by | <a href="#">C08B 37/0075</a>  |
| <a href="#">C08B 37/16</a> | covered by | <a href="#">C08B 37/0012</a>  |
- 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.

#### Preparation

- |             |   |             |   |
|-------------|---|-------------|---|
| <b>1/00</b> | <b>Preparatory treatment of cellulose for making derivatives thereof {, e.g. pre-treatment, pre-soaking, activation}</b>  | 3/14        | • in which the organic acid residue contains substituents, e.g. NH <sub>2</sub> , Cl  |
| 1/003       | • {Preparation of cellulose solutions, i.e. dopes, with different possible solvents, e.g. ionic liquids (solutions used in the manufacture of monocomponent artificial filaments or cellulose or derivatives thereof <a href="#">D01F 2/02</a> )} | 3/16        | • Preparation of mixed organic cellulose esters {, e.g. cellulose aceto-formate or cellulose aceto-propionate}  |
| 1/006       | • {Preparation of cuprammonium cellulose solutions}   | 3/18        | • . Aceto-butyrate  |
| 1/02        | • Rendering cellulose suitable for esterification {(esterification per se, <a href="#">C08B 3/00</a> , <a href="#">C08B 5/00</a> , <a href="#">C08B 7/00</a> or <a href="#">C08B 9/00</a> )}  | 3/20        | • Esterification with maintenance of the fibrous structure of the cellulose (surface esterification of textiles <a href="#">D06M 13/00</a> )              |
| 1/04        | • . for the preparation of cellulose nitrate  | 3/22        | • Post-esterification treatments, including purification  |
| 1/06        | • Rendering cellulose suitable for etherification {(etherification per se <a href="#">C08B 11/00</a> )}   | 3/24        | • . Hydrolysis or ripening  |
| 1/08        | • Alkali cellulose  | 3/26        | • . Isolation of the cellulose ester  |
| 1/10        | • . Apparatus for the preparation of alkali cellulose   | 3/28        | • . . by precipitation  |
| 1/12        | • . . Steeping devices  | 3/30        | • . Stabilising (by addition of stabilisers <a href="#">C08K</a> )  |
| 1/14        | • . . Ripening devices  | <b>5/00</b> | <b>Preparation of cellulose esters of inorganic acids {, e.g. phosphates (rendering cellulose suitable for esterification <a href="#">C08B 1/02</a>)}</b> |
| <b>3/00</b> | <b>Preparation of cellulose esters of organic acids {(rendering cellulose suitable for esterification <a href="#">C08B 1/02</a>)}</b>   | 5/02        | • Cellulose nitrate {, i.e. nitrocellulose (rendering cellulose suitable for the preparation of cellulose nitrate <a href="#">C08B 1/04</a> )}            |
| 3/02        | • Catalysts used for the esterification   | 5/04        | • . Post-esterification treatments {, e.g. densification of powders}, including purification  |
| 3/04        | • Cellulose formate   | 5/06        | • . . Isolation of the cellulose nitrate  |
| 3/06        | • Cellulose acetate {, e.g. mono-acetate, di-acetate or tri-acetate}  | 5/08        | • . . Stabilisation (by addition of stabilisers <a href="#">C08K</a> ); {Post-treatment, e.g. phlegmatisation}  |
| 3/08        | • of monobasic organic acids with three or more carbon atoms, {e.g. propionate or butyrate}   | 5/10        | • . . Reducing the viscosity  |
| 3/10        | • . with five or more carbon-atoms, {e.g. valerate}   | 5/12        | • . . Replacing the water by organic liquids  |
| 3/12        | • of polybasic organic acids  | 5/14        | • Cellulose sulfate   |

|              |   |              |  |
|--------------|---|--------------|--|
| <b>7/00</b>  | <b>Preparation of cellulose esters of both organic and inorganic acids</b> {(rendering cellulose suitable for esterification <a href="#">C08B 1/02</a> )}   | 30/04        | • Extraction or purification   |
|              |   | 30/042       | • • {from cereals or grains}   |
|              |   | 30/044       | • • • {from corn or maize}   |
| <b>9/00</b>  | <b>Cellulose xanthate; Viscose</b> {(formation of films <a href="#">C08J 5/18</a> ; formation of fibres <a href="#">D01F</a> ; rendering cellulose suitable for esterification <a href="#">C08B 1/02</a> )} | 30/046       | • • • {from wheat}   |
|              |   | 30/048       | • • {from potatoes}  |
| 9/02         | • Sulfidisers; Dissolvers   | 30/06        | • Drying; Forming  |
| 9/04         | • Continuous processes  | 30/08        | • Concentration of starch suspensions  |
| 9/06         | • Single-stage processes  | 30/10        | • Working-up residues from the starch extraction {, e.g. potato peel or steeping water}, including pressing water from the starch-extracted material   |
| <b>11/00</b> | <b>Preparation of cellulose ethers</b> {(rendering cellulose suitable for etherification <a href="#">C08B 1/06</a> )}   | 30/12        | • Degraded, {destructured} or non-chemically modified starch {, e.g. mechanically, enzymatically or by irradiation; Bleaching of starch (preparation of chemical derivatives of starch <a href="#">C08B 31/00</a> )}           |
| 11/02        | • Alkyl or cycloalkyl ethers  |              |  |
| 11/04        | • • with substituted hydrocarbon radicals   | 30/14        | • • Cold water dispersible or pregelatinised starch  |
| 11/06        | • • • with halogen-substituted hydrocarbon radicals   | 30/16        | • • Apparatus therefor   |
| 11/08        | • • • with hydroxylated hydrocarbon radicals; Esters, ethers, or acetals thereof  | 30/18        | • • Dextrin {, e.g. yellow canari, white dextrin, amylopectin or maltodextrin; Methods of depolymerisation, e.g. by irradiation or mechanically}   |
| 11/10        | • • • substituted with acid radicals  |              |  |
| 11/12        | • • • substituted with carboxylic radicals {, e.g. carboxymethylcellulose [CMC]}  | 30/20        | • Amylose or amylopectin (chemical derivatives thereof <a href="#">C08B 33/00</a> , <a href="#">C08B 35/00</a> )   |
| 11/14        | • • • with nitrogen-containing groups   |              |  |
| 11/145       | • • • • with basic nitrogen, e.g. aminoalkyl ethers   | <b>31/00</b> | <b>Preparation of derivatives of starch</b> (derivatives of amylose <a href="#">C08B 33/00</a> ; derivatives of amylopectin <a href="#">C08B 35/00</a> )   |
| 11/15        | • • • • with carbamoyl groups {, i.e. -CO-NH <sub>2</sub> }   | 31/003       | • {Crosslinking of starch}   |
| 11/155       | • • • • with cyano groups, e.g. cyanoalkyl ethers   | 31/006       | • • {Crosslinking of derivatives of starch}  |
| 11/16        | • Aryl or aralkyl ethers  | 31/02        | • Esters   |
| 11/18        | • • with substituted hydrocarbon radicals   | 31/04        | • • of organic acids {, e.g. alkenyl-succinated starch}  |
| 11/187       | • with olefinic unsaturated groups  | 31/06        | • • of inorganic acids   |
| 11/193       | • Mixed ethers, i.e. ethers with two or more different etherifying groups   | 31/063       | • • • {Starch sulfates}  |
| 11/20        | • Post-etherification treatments of chemical or physical type, {e.g. mixed etherification in two steps}, including purification   | 31/066       | • • • {Starch phosphates, e.g. phosphorylated starch}  |
| 11/22        | • • Isolation   | 31/08        | • Ethers   |
| <b>13/00</b> | <b>Preparation of cellulose ether-esters</b>  | 31/10        | • • Alkyl or cycloalkyl ethers   |
| 13/02        | • Cellulose ether xanthates   | 31/12        | • • having alkyl or cycloalkyl radicals substituted by heteroatoms, {e.g. hydroxyalkyl or carboxyalkyl starch}   |
| <b>15/00</b> | <b>Preparation of other cellulose derivatives or modified cellulose</b> {, e.g. complexes}  | 31/125       | • • • {having a substituent containing at least one nitrogen atom, e.g. cationic starch}   |
| 15/005       | • {Crosslinking of cellulose derivatives}   | 31/14        | • • Aryl or aralkyl ethers   |
| 15/02        | • Oxycellulose; Hydrocellulose; {Cellulosehydrate, e.g. microcrystalline cellulose}   | 31/16        | • Ether-esters   |
| 15/04        | • • Carboxycellulose, e.g. prepared by oxidation with nitrogen dioxide  | 31/18        | • Oxidised starch  |
| 15/05        | • Derivatives containing elements other than carbon, hydrogen, oxygen, halogens or sulfur (esters or phosphorous acids <a href="#">C08B 5/00</a> )  | 31/185       | • • {Derivatives of oxidised starch, e.g. crosslinked oxidised starch}   |
| 15/06        | • • containing nitrogen {, e.g. carbamates}   | <b>33/00</b> | <b>Preparation of derivatives of amylose</b>   |
| 15/08        | • Fractionation of cellulose, e.g. separation of cellulose crystallites   | 33/02        | • Esters   |
| 15/10        | • Crosslinking of cellulose   | 33/04        | • Ethers   |
|              |   | 33/06        | • Ether-esters   |
|              |   | 33/08        | • Oxidised amylose   |
| <b>16/00</b> | <b>Regeneration of cellulose</b>  | <b>35/00</b> | <b>Preparation of derivatives of amylopectin</b>   |
| <b>17/00</b> | <b>Apparatus for esterification or etherification of cellulose</b>  | 35/02        | • Esters   |
| 17/02        | • for making organic esters of cellulose  | 35/04        | • Ethers   |
| 17/04        | • for making cellulose nitrate  | 35/06        | • Ether-esters   |
| 17/06        | • for making cellulose ethers   | 35/08        | • Oxidised amylopectin   |
| <b>30/00</b> | <b>Preparation of starch, degraded or non-chemically modified starch, amylose, or amylopectin</b>   | <b>37/00</b> | <b>Preparation of polysaccharides not provided for in groups <a href="#">C08B 1/00</a> - <a href="#">C08B 35/00</a>; Derivatives thereof (cellulose <a href="#">D21</a>; {microbiological processes <a href="#">C12P</a>})</b> |
| 30/02        | • Preparatory treatment, e.g. crushing of raw materials {or steeping process (machines for preliminary washing <a href="#">A23N</a> )}  | 37/0003      | • {General processes for their isolation or fractionation, e.g. purification or extraction from biomass}   |

- 37/0006 . {Homoglycans, i.e. polysaccharides having a main chain consisting of one single sugar, e.g. colominic acid}
- 37/0009 . . {alpha-D-Glucans, e.g. polydextrose, alternan, glycogen; (alpha-1,4)(alpha-1,6)-D-Glucans; (alpha-1,3)(alpha-1,4)-D-Glucans, e.g. isolichenan or nigeran; (alpha-1,4)-D-Glucans; (alpha-1,3)-D-Glucans, e.g. pseudonigeran; Derivatives thereof}
- 37/0012 . . . {Cyclodextrin [CD], e.g. cycle with 6 units (alpha), with 7 units (beta) and with 8 units (gamma), large-ring cyclodextrin or cycloamylose with 9 units or more; Derivatives thereof}
- 37/0015 . . . . {Inclusion compounds, i.e. host-guest compounds, e.g. polyrotaxanes}
- 37/0018 . . . {Pullulan, i.e. (alpha-1,4)(alpha-1,6)-D-glucan; Derivatives thereof}
- 37/0021 . . . {Dextran, i.e. (alpha-1,4)-D-glucan; Derivatives thereof, e.g. Sephadex, i.e. crosslinked dextran}
- 37/0024 . . {beta-D-Glucans; (beta-1,3)-D-Glucans, e.g. paramylon, coriolan, sclerotan, pachyman, callose, scleroglucan, schizophyllan, laminaran, lentinan or curdlan; (beta-1,6)-D-Glucans, e.g. pustulan; (beta-1,4)-D-Glucans; (beta-1,3)(beta-1,4)-D-Glucans, e.g. lichenan; Derivatives thereof}
- 37/0027 . . . {2-Acetamido-2-deoxy-beta-glucans; Derivatives thereof}
- 37/003 . . . . {Chitin, i.e. 2-acetamido-2-deoxy-(beta-1,4)-D-glucan or N-acetyl-beta-1,4-D-glucosamine; Chitosan, i.e. deacetylated product of chitin or (beta-1,4)-D-glucosamine; Derivatives thereof}
- 37/0033 . . . {Xanthan, i.e. D-glucose, D-mannose and D-glucuronic acid units, substituted with acetate and pyruvate, with a main chain of (beta-1,4)-D-glucose units; Derivatives thereof}
- 37/0036 . . {Galactans; Derivatives thereof}
- 37/0039 . . . {Agar; Agarose, i.e. D-galactose, 3,6-anhydro-D-galactose, methylated, sulfated, e.g. from the red algae Gelidium and Gracilaria; Agarpectin; Derivatives thereof, e.g. Sepharose, i.e. crosslinked agarose}
- 37/0042 . . . {Carragenan or carragen, i.e. D-galactose and 3,6-anhydro-D-galactose, both partially sulfated, e.g. from red algae Chondrus crispus or Gigantia stellata; kappa-Carragenan; iota-Carragenan; lambda-Carragenan; Derivatives thereof}
- 37/0045 . . {alpha-D-Galacturonans, e.g. methyl ester of (alpha-1,4)-linked D-galacturonic acid units, i.e. pectin, or hydrolysis product of methyl ester of alpha-1,4-linked D-galacturonic acid units, i.e. pectinic acid; Derivatives thereof}
- 37/0048 . . . {Processes of extraction from organic materials}
- 37/0051 . . {beta-D-Fructofuranans, e.g. beta-2,6-D-fructofuranan, i.e. levan; Derivatives thereof}
- 37/0054 . . . {Inulin, i.e. beta-2,1-D-fructofuranan; Derivatives thereof}
- 37/0057 . . {beta-D-Xylans, i.e. xylosaccharide, e.g. arabinoxylan, arabinofuranan, pentosans; (beta-1,3)(beta-1,4)-D-Xylans, e.g. rhodymenans; Hemicellulose; Derivatives thereof}
- 37/006 . {Heteroglycans, i.e. polysaccharides having more than one sugar residue in the main chain in either alternating or less regular sequence; Gellans; Succinoglycans; Arabinogalactans; Tragacanth or gum tragacanth or traganth from Astragalus; Gum Karaya from Sterculia urens; Gum Ghatti from Anogeissus latifolia; Derivatives thereof}
- 37/0063 . . {Glycosaminoglycans or mucopolysaccharides, e.g. keratan sulfate; Derivatives thereof, e.g. fucoidan}
- 37/0066 . . . {Isolation or extraction of proteoglycans from organs}
- 37/0069 . . . {Chondroitin-4-sulfate, i.e. chondroitin sulfate A; Dermatan sulfate, i.e. chondroitin sulfate B or beta-heparin; Chondroitin-6-sulfate, i.e. chondroitin sulfate C; Derivatives thereof}
- 37/0072 . . . {Hyaluronic acid, i.e. HA or hyaluronan; Derivatives thereof, e.g. crosslinked hyaluronic acid (hylan) or hyaluronates}
- 37/0075 . . . {Heparin; Heparan sulfate; Derivatives thereof, e.g. heparosan; Purification or extraction methods thereof}
- 37/0078 . . . . {Degradation products}
- 37/0081 . . . . {Reaction with amino acids, peptides, or proteins}
- 37/0084 . . {Gulurmannuronans, e.g. alginic acid, i.e. D-mannuronic acid and D-guluronic acid units linked with alternating alpha- and beta-1,4-glycosidic bonds; Derivatives thereof, e.g. alginates}
- 37/0087 . . {Glucomannans or galactomannans; Tara or tara gum, i.e. D-mannose and D-galactose units, e.g. from Cesalpinia spinosa; Tamarind gum, i.e. D-galactose, D-glucose and D-xylose units, e.g. from Tamarindus indica; Gum Arabic, i.e. L-arabinose, L-rhamnose, D-galactose and D-glucuronic acid units, e.g. from Acacia Senegal or Acacia Seyal; Derivatives thereof}
- 37/009 . . . {Konjac gum or konjac mannan, i.e. beta-D-glucose and beta-D-mannose units linked by 1,4 bonds, e.g. from Amorphophallus species; Derivatives thereof}
- 37/0093 . . . {Locust bean gum, i.e. carob bean gum, with (beta-1,4)-D-mannose units in the main chain branched with D-galactose units in (alpha-1,6), e.g. from the seeds of carob tree or Ceratonia siliqua; Derivatives thereof}
- 37/0096 . . . {Guar, guar gum, guar flour, guaran, i.e. (beta-1,4) linked D-mannose units in the main chain branched with D-galactose units in (alpha-1,6), e.g. from Cyamopsis Tetragonolobus; Derivatives thereof}
- 37/12 . Agar-agar; Derivatives thereof (not used)
- 37/125 . . {Other polysaccharides of algae such as carragenan (not used)}
- 37/14 . Hemicellulose; Derivatives thereof (not used)
- 37/143 . . {composed by pentose units, e.g. xylose, xylan, pentosans, arabinose (not used)}
- 37/146 . . {composed by gluco and/or galactomannans, for example guar gum, locust bean gum (not used)}

- 37/18
- Reserve carbohydrates, e.g. glycogen, inulin, laminarin; Derivatives thereof (not used)