

# 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

- |       |   |      |   |
|-------|---|------|---|
| 1/00  | Preparatory treatment of cellulose for making derivatives thereof {, e.g. pre-treatment, pre-soaking, activation}   | 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  | 5/00 | Preparation of cellulose esters of inorganic acids {, e.g. phosphates (rendering cellulose suitable for esterification <a href="#">C08B 1/02</a> )} |
| 3/00  | Preparation of cellulose esters of organic acids {(rendering cellulose suitable for esterification <a href="#">C08B 1/02</a> )}   | 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)