CPC COOPERATIVE PATENT CLASSIFICATION

C CHEMISTRY; METALLURGY
(NOTES omitted)

CHEMISTRY

C12 BIOCHEMISTRY; BEER; SPIRITS; WINE; VINEGAR; MICROBIOLOGY; ENZYMOLOGY; MUTATION OR GENETIC ENGINEERING
(NOTES omitted)

C12M APPARATUS FOR ENZYMOLOGY OR MICROBIOLOGY; {APPARATUS FOR CULTURING MICROORGANISMS FOR PRODUCING BIOMASS, FOR GROWING CELLS OR FOR OBTAINING FERMENTATION OR METABOLIC PRODUCTS, i.e. BIOREACTORS OR FERMENTERS}

NOTES

1. In this subclass the term microorganism includes prokaryotic and eukaryotic cells. Viruses, human, animal or plant cells, protozoa, tissues and unicellular algae are considered microorganisms.
2. When classifying an apparatus according to its use in group C12M 21/00, classification should also be given in at least one of the groups C12M 23/00-C12M 99/00.
3. This subclass covers apparatus or devices for the fermentation or for growing microorganisms or animal tissues of both laboratory and industrial scale, i.e. bioreactors.
4. This subclass covers also apparatus or devices for the pre-treatment or after-treatment of the biomass or microorganisms to be cultured or that have been cultured.
5. This subclass does not cover the methods or processes taking place in the bioreactors that are not based on the use of the parts of the apparatus.
6. This subclass does not cover:
   - apparatus for culturing plant tissue, which are covered by A01H 4/001;
   - apparatus for preservation of living parts of bodies of humans or animals, which are covered by A01N 1/0242;
   - apparatus or devices for testing sterility conditions not linked to a bioreactor or fermenter growing biomass, which are covered by A61L 2/00, G01N 31/226;
   - apparatus for biological treatment of water, waste water, sewage or sludge, which are covered by C02F 3/00, C02F 11/00;
   - apparatus for brewing of beer, which are covered by C12C;
   - apparatus for production of wine or vinegar, which are covered by C12G, C12J 1/10;
   - apparatus or devices for DNA and RNA technology, which are covered by B01L 7/52, B01J 19/0046, C12N 15/1003;
   - fermentation processes, which are covered by C12P;
   - apparatus for bioleaching of ores, which are covered by C22B 3/18;
   - removing cellulose from cellulosic substances, which is covered by D21C;
   - apparatus or devices for sampling, detection, investigation or analysis of microorganisms or biosensors, which are covered by G01N 33/48;
   - apparatus for automatic analysis not linked to a bioreactor or fermenter growing biomass, which are covered by G01N 35/00;
   - testing or evaluating the effect of a chemical or biological compound involving human or animal cells, which are covered by G01N 33/5005;
   - apparatus for immunological test processes, which are covered by G01N 33/5302.

WARNING

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.

1/00 Apparatus for enzymology or microbiology

NOTE

This group covers:
- apparatus where microorganisms or enzymes are produced or isolated;
- apparatus where the characteristics of microorganisms or enzymes are investigated, e.g. which growth factors are necessary;
- apparatus specially adapted to employ microorganisms or enzymes as "reactants" or biocatalysts;
- apparatus of both laboratory and industrial scale.

1/002 . {Photo bio reactors}
1/005 . {Incubators}
1/007 . {Flexible bags or containers}

1/02 . with agitation means; with heat exchange means
1/04 . with gas introduction means
1/045 . . {providing an anaerobic atmosphere}
1/06 . . with agitator, e.g. impeller
1/065 . . . {on a horizontal axis}
1/08 . . with draft tube
1/09 . . Flotation apparatus
1/10 . rotatably mounted
1/107 . with means for collecting fermentation gases, e.g. methane (producing methane by anaerobic treatment of sludge C02F 11/04)
1/113 . . with transport of the substrate during the fermentation
1/12 . with sterilisation, filtration or dialysis means
1/121 . . {with sterilisation means}
1/123 . . {with flat plate filter elements}
1/125 . . . {Culture inserts}
1/126 . . {with hollow fibres or tubular filter elements}
1/128 . . {with moving or mobile filter elements}
1/14 . with means providing thin layers or with multi-level trays
1/16 . containing, or adapted to contain, solid media
1/165 . . {treated with gel punching devices}
1/18 . . Multiple fields or compartments
1/20 . . . Horizontal planar fields
1/203 . . . . {Disc dispensing devices therefor}
1/206 . . . . {Multiple discs supporting devices}
1/21 . Froth suppressors
1/22 . Petri type dish
1/24 . tube or bottle type (anaerobic jars C12M 1/045)
1/26 . Inoculator or sampler
1/261 . . {Airborne microorganism samplers}
1/262 . . {Handle streaking devices}
1/263 . . {Replica plating devices}
1/264 . . {Devices involving centrifugal, centripetal or rotational forces}
1/265 . . {Pipettes; Syringes; Suction devices}
1/266 . . {Magnetic separators}
1/267 . . {Biofilm separators}
1/268 . . {Positioning tools for sampling or inoculating devices}
1/28 . . being part of container
1/30 . . . Sampler being a swab
1/32 . . multiple field or continuous type
1/33 . Disintegrators
1/34 . Measuring or testing with condition measuring or sensing means, e.g. colony counters
1/3407 . . {Measure of electrical or magnetical factor}
1/3415 . . {Pressure measure, e.g. with manometers, respirometers}
1/3423 . . {Calorimetry}
1/343 . . {Mass spectrometry}
1/3438 . . {with use of isotopes, e.g. radiorespirometers, scintillometers}
1/3446 . . {Photometry, spectroscopy, laser technology}
1/3453 . . . {Opacity, turbidity or light transmission measure; Nephelometry}
1/3461 . . . {Bio- or chemi-luminescence}
1/3469 . . . {Infra red spectroscopy}
1/3476 . . . {Fluorescence spectroscopy}
1/3484 . . {Pen or contact colony counters}
1/3492 . . {with use of lecture and interpretation devices, grids}
1/36 . including condition or time responsive control, e.g. automatically controlled fermentors (controlling or regulating in general G05)
1/38 . . Temperature-responsive control
1/40 . Apparatus specially designed for the use of free, immobilised, or carrier-bound enzymes, e.g. apparatus containing a fluidised bed of immobilised enzymes
1/42 . Apparatus for the treatment of microorganisms or enzymes with electrical or wave energy, e.g. magnetism, sonic waves

3/00 Tissue, human, animal or plant cell, or virus culture apparatus

3/003 . {for culture in eggs}
3/006 . {Cell injection or fusion devices}
3/02 . with means providing suspensions
3/04 . with means providing thin layers
3/043 . . {rotatably mounted}
3/046 . . . {Roller bottles}
3/06 . with filtration, ultrafiltration, inverse osmosis or dialysis means
3/062 . . {with flat plate filter elements}
3/065 . . {with hollow fibres or tubes}
3/067 . . {with moving or mobile filter elements}
3/08 . Apparatus for tissue disaggregation
3/10 . for culture in eggs

21/00 {Bioreactors or fermenters specially adapted for specific uses (digesters for manure A01C 3/023; apparatus for PCR B01L 7/52; destroying or transforming solid waste B09B 3/00; methods for genetic engineering C12N 15/00, C12Q 1/68; nucleic acid amplification reactions C12Q 1/6844)**}**

21/02 . {Photobioreactors (culturing algae A01G 33/00, A01H 4/001, C12N 1/12)}
21/04 . {for producing gas, e.g. biogas (digesters for manure with production of biogas A01C 3/028, biological treatment of water, waste water or sewage C02F 3/00, C02F 11/02, preparation of natural gas or syngas C10L 3/06, C10L 3/10)}
21/06 . {for in vitro fertilization}
21/08 . {for producing artificial tissue or for ex-vivo cultivation of tissue (prostheses A61F 2/00, grafts A61L 27/00)}
21/10 . {adapted for the cultivation of avian eggs or in avian eggs, e.g. for vaccine production}
21/12 . {for producing fuels or solvents (C12M 21/04 takes precedence; liquid carbonaceous fuels C10L 1/00, solid fuels C10L 5/00)}
21/14 . {for producing enzymes}
21/16 . {Solid state fermenters, e.g. for koji production}
21/18 . {Apparatus specially designed for the use of free, immobilized or carrier-bound enzymes}

23/00 {Constructional details, e.g. recesses, hinges (flow directing inserts in C12M 27/18-C12M 27/24; apparatus for chemical or physical processes in general B01J, chemical or physical laboratory apparatus in general B01L)**}**

23/02 . {Form or structure of the vessel (large containers B65D 88/00)}

23/04 . . {Flat or tray type, drawers (C12M 23/10, C12M 23/12, C12M 23/16 take precedence)}
23/06 . . {Tubular (C12M 23/08, C12M 23/16 take precedence)}
23/08 . . {Flask, bottle or test tube}
23/10 . . {Petri dish (crystallising dishes B01L 3/06)}
23/12 . . {Well or multiwell plates (C12M 25/04 takes precedence)}
23/14 . . {Bags}
23/16 . . {Microfluidic devices; Capillary tubes (integrated microfluidic structures B01L 3/5027; microreactors B01J 19/0093)}
23/18 . . {Open ponds; Greenhouse type or underground installations}
23/20 . {Material Coatings (immunocoatings C12M 25/00)}
23/22 . {Transparent or translucent parts (glassware for laboratory use B01L 3/00)}
23/24 . {Gas permeable parts}
23/26 . {flexible (flexible containers for laboratory use B01L 3/505)}
23/28 . {disposable or single use}
23/30 . {biodegradable}
23/32 . {Frangible parts}
23/34 . {Internal compartments or partitions}
23/36 . {Means for collection or storage of gas; Gas holders}
23/38 . {Caps; Covers; Plugs; Pouring means}
23/40 . {Manifolds; Distribution pieces (fluid transfer means B01L 3/563)}
23/42 . {Integrated assemblies, e.g. cassettes or cartridges}
23/44 . {Multiple separable units; Modules}
23/46 . {Means for fastening}
23/48 . {Holding appliances; Racks; Supports (holding devices for laboratory apparatus B01L 9/00)}
23/50 . {Means for positioning or orientating the apparatus (C12M 41/08 takes precedence)}
23/52 . {Mobile; Means for transporting the apparatus (transportable laboratories B01L 99/00)}
23/54 . {hand portable}
23/56 . {Floating elements}
23/58 . {Reaction vessels connected in series or in parallel (combinations of bioreactors with other apparatus, C12M 43/00)}

25/00 **{Means for supporting, enclosing or fixing the microorganisms, e.g. immunocoatings}**
25/01 . {Drops}
25/02 . {Membranes; Filters (filters or filtration in general B01D 24/00-B01D 41/00)}
25/04 . . {in combination with well or multiwell plates, i.e. culture inserts}
25/06 . {Plates; Walls; Drawers; Multilayer plates}
25/08 . . {electrically charged}
25/10 . {Hollow fibers or tubes (hollow fiber modules in general B01D 63/02)}
25/12 . . {the culture medium flowing outside the fiber or tube}
25/14 . {Scaffolds; Matrices (in general C12N 5/0068)}
25/16 . {Particles; Beads; Granular material; Encapsulation (chemical or physical processes conducted in the presence of fluids and solid particles B01J 8/00)}
25/18 . . {Fixed or packed bed}
25/20 . . {Fluidized bed (in chemical or physical processes B01J 8/18)}

27/00 **{Means for mixing, agitating or circulating fluids in the vessel** (by introduction of gas C12M 29/06, C12M 29/14, mixing in general or mixers per se B01F; mixing in apparatus for chemical or physical processes B01J)**}**
27/02 . {Stirrer or mobile mixing elements}
27/04 . . {with introduction of gas through the stirrer or mixing element}
27/06 . . {with horizontal or inclined stirrer shaft or axis}
27/08 . . {with different stirrer shapes in one shaft or axis}
27/10 . {Rotating vessel}
27/12 . . {Roller bottles; Roller tubes}
27/14 . {Rotation or movement of the cells support, e.g. rotated hollow fibers}
27/16 . {Vibrating; Shaking; Tilting}
27/18 . {Flow directing inserts}
27/20 . . {Baffles; Ribs; Ribbons; Auger vanes}
27/22 . . {Perforated plates, discs or walls}
27/24 . . {Draft tube (C12M 29/08 takes precedence)}

29/00 **{Means for introduction, extraction or recirculation of materials, e.g. pumps** (pumps per se F04B)**}**
29/02 . {Percolation}
29/04 . {Filters; Permeable or porous membranes or plates, e.g. dialysis}
29/06 . {Nozzles; Sprayers; Spargers; Diffusers (per se B01F 3/04106, B01J 19/26)}
29/08 . . {Air lift}
29/10 . {Perfusion}
29/12 . {Pulsatile flow}
29/14 . {Pressurized fluid}
29/16 . {Hollow fibers (hollow fiber modules in general B01D 63/02)}
29/18 . {External loop; Means for reintroduction of fermented biomass or liquid percolate (loop type reactors for chemical or physical processes B01J 19/2435)}
29/20 . {Degassing; Venting; Bubble traps (means for collection or storage of gas C12M 23/36; gas collection apparatus for laboratory use B01L 5/02)}
29/22 . . {Oxygen discharge}
29/24 . {Recirculation of gas}
29/26 . {Conditioning fluids entering or exiting the reaction vessel}

31/00 **{Means for providing, directing, scattering or concentrating light** (C12M 41/06 takes precedence)**}**
31/02 . {located outside the reactor}
31/04 . . {Mirrors}
31/06 . . {Lenses}
31/08 . {by conducting or reflecting elements located inside the reactor or in its structure}
31/10 . {by light emitting elements located inside the reactor, e.g. LED or OLED}
31/12 . {Rotating light emitting elements}

33/00 **{Means for introduction, transport, positioning, extraction, harvesting, peeling or sampling of biological material in or from the apparatus** (chemical or physical laboratory apparatus in general B01L, devices for taking cell samples A61B 10/0045, withdrawing or distributing predetermined quantities of fluid B01L 99/00)**}**

33/02 . {by impregnation, e.g. using swabs or loops (fluid transport using swabs B01L 3/5029)}

33/04 . {by injection or suction, e.g. using pipettes, syringes, needles (pipettes in general B01L 3/02)}

33/06 . . {for multiple inoculation or multiple collection of samples}

33/07 . . {Dosage or metering devices therefore}

33/08 . {by vibration}

33/10 . {by centrifugation (centrifuges in general B04B); Cyclones (cyclones in general B04C)}

33/12 . {by pressure}

33/14 . {with filters, sieves or membranes}

33/16 . {Screw conveyor}

33/18 . {Rollers}

33/20 . {Ribbons}

33/22 . {Settling tanks; Sedimentation by gravity (settling tanks per se B01D 21/02)}

35/00 **{Means for application of stress for stimulating the growth of microorganisms or the generation of fermentation or metabolic products; Means for electroporation or cell fusion** (machines for extracting juice from animal or plant tissue by electroplasmolysis A23N 1/006, processes employing electric or wave energy B01J 19/08; treatment of microorganisms or enzymes with electrical or wave energy C12N 13/00; methods for cell fusion C12N 15/02; introduction of foreign genetic material C12N 15/87)**}**

35/02 . {Electrical or electromagnetic means, e.g. for electroporation or for cell fusion}

35/04 . {Mechanical means, e.g. sonic waves, stretching forces, pressure or shear stimuli}

35/06 . {Magnetic means (C12M 35/02 takes precedence)}

35/08 . {Chemical, biochemical or biological means, e.g. plasma jet, co-culture}

37/00 **{Means for sterilizing, maintaining sterile conditions or avoiding chemical or biological contamination** (C12M 23/38 takes precedence; filtration in general and filters per se B01D 24/00-B01D 41/00; autoclaves B01J 3/04; treatment of microorganisms with electrical or wave energy C12N 13/00)**}**

37/02 . {Filters}

37/04 . {Seals}

37/06 . {Means for testing the completeness of the sterilization (testing for sterility conditions C12Q 1/22)}

39/00 **{Means for cleaning the apparatus or avoiding unwanted deposits of microorganisms** (apparatus for cleaning laboratory receptacles or instruments B01L 99/00; cleaning in general B08B)**}**

41/00 **{Means for regulation, monitoring, measurement or control, e.g. flow regulation** (controlling or regulating chemical, physical or physicochemical processes B01J 19/0006; heating or cooling apparatus for laboratory use B01L 7/00; electro optical investigation of individual particles, flow cytometers G01N 15/14; automatic analysis G01N 35/00; controlling or regulating in general G06N)**}**

41/02 . {of foam (foam prevention during gasification of liquids B01D 19/02)}

41/04 . . {Means for foam enhancement (making foam by mixing B01F 3/04446)}

41/06 . {of illumination}

41/08 . . {Means for changing the orientation}

41/10 . . {Filtering the incident radiation}

41/12 . {of temperature (controlling the temperature of chemical or physical processes B01J 19/0013, heating or cooling apparatus for laboratory use B01L 7/00)}

41/14 . . {Incubators; Climatic chambers (per se B01L 1/00)}

41/16 . . {by recirculation of culture medium at controlled temperature}

41/18 . . {Heat exchange systems, e.g. heat jackets or outer envelopes}

41/20 . . . {the heat transfer medium being a gas}

41/22 . . . {in contact with the bioreactor walls}

41/24 . . . {inside the vessel}

41/26 . {of pH}

41/28 . {of redox potential}

41/30 . {of concentration}

41/32 . . {of substances in solution}

41/34 . . {of gas}

41/36 . . {of biomass, e.g. colony counters or by turbidity measurements (electrooptical investigation of individual particles G01N 15/14, flow cytometers G01N 15/1404)}

41/38 . . {of metabolites or enzymes in the cells}

41/40 . {of pressure}

41/42 . {of agitation speed}

41/44 . {of volume or liquid level}

41/46 . {of cellular or enzymatic activity or functionality, e.g. cell viability}

41/48 . {Automatic or computerized control (automatic analysis G01N 35/00)}

43/00 **{Combinations of bioreactors or fermenters with other apparatus}**

43/02 . {Bioreactors or fermenters combined with devices for liquid fuel extraction; Biorefineries}

43/04 . {Bioreactors or fermenters combined with combustion devices or plants, e.g. for carbon dioxide removal (C12M 43/06 takes precedence; recovery of carbon dioxide C12F 3/02)}

43/06 . {Photobioreactors combined with devices or plants for gas production different from a bioreactor of fermenter}

43/08 . {Bioreactors or fermenters combined with devices or plants for production of electricity}

45/00 **{Means for pre-treatment of biological substances}**

45/02 . {by mechanical forces; Stirring; Trituration; Comminuting (crushing, pulverizing, disintegrating in general B02C)}

45/03 . {by control of the humidity or content of liquids; Drying}
45/04 . {Phase separators; Separation of non fermentable material; Fractionation}
45/05 . {by centrifugation (centrifuges in general B04B)}
45/06 . {by chemical means or hydrolysis}
45/07 . {by electrical or electromagnetic forces}
45/09 . {by enzymatic treatment}
45/20 . {Heating; Cooling (heating or cooling apparatus for laboratory uses B01L 7/00)}
45/22 . {Means for packing or storing viable microorganisms (casings for storing cell samples A61B 10/0096, preservation of living parts of the human or animal body A01N 1/02)}

47/00 {Means for after-treatment of the produced biomass or of the fermentation or metabolic products, e.g. storage of biomass (filters in general B01D 23/00-B01D 41/00)**}**

47/02 . {Separating microorganisms from the culture medium; Concentration of biomass (separating microorganisms from their culture media C12N 1/02)}
47/04 . {Cell isolation or sorting (purging biological preparations of unwanted cells C12N 5/0081, determining the presence or kind of microorganism C12Q 1/04)}
47/06 . {Hydrolysis; Cell lysis; Extraction of intracellular or cell wall material (lysis of microorganisms C12N 1/06; extracting or separating nucleic acids from biological samples C12N 15/1003)}
47/08 . {Homogenizing}
47/10 . {Separation or concentration of fermentation products (bioreactors combined with means for distillation or extraction of liquid fuel C12M 43/02)}
47/12 . {Purification (C12M 47/04 takes precedence)}
47/14 . {Drying}
47/16 . {Sterilization (autoclaves in general B01J 3/04)}
47/18 . {Gas cleaning, e.g. scrubbers; Separation of different gases (separating dispersed particles from gases or vapours B01D 45/00; separation of gases or vapours B01D 53/00; gas washing apparatus for laboratory uses B01L 5/04)}
47/20 . {Heating or cooling (heating or cooling apparatus for laboratory uses B01L 7/00)}

99/00 {Subject matter not otherwise provided for in other groups of this subclass}

99/02 . {Disc dispensing devices}

C12M

APPARATUS FOR ENZYMOLOGY OR MICROBIOLOGY; {APPARATUS FOR CULTURING MICROORGANISMS FOR PRODUCING BIOMASS, FOR GROWING CELLS OR FOR OBTAINING FERMENTATION OR METABOLIC PRODUCTS, i.e. BIOREACTORS OR FERMENTERS}

Definition statement

This place covers:

Apparatus or devices specially adapted to the fermentation or to the growth of microorganisms, animal or plant cells or tissues, i.e. bioreactors and fermenters. The apparatus or devices covered by this subclass are designed for producing biomass or artificial tissues in laboratory or industrial scale.

The most simple bioreactor or fermenter is an apparatus comprising at least a container where the microorganisms or cells are placed and which is put under conditions that make it suitable for the culturing of the microorganisms or cells.

This subclass covers also devices for the pre-treatment of the material to be treated in the apparatus and for the after-treatment of the biomass, cells or tissues grown in the apparatus.

This subclass does not cover the methods or processes taking place in bioreactors which are not based on the use of the apparatus or its parts.

In this subclass the term microorganism includes prokaryotic and eukaryotic cells. Viruses, human, animal or plant cells, protozoa and unicellular algae are considered microorganisms.

Relationships with other classification places

Apparatus and devices per se which are not specifically intended or adapted for culturing microorganisms or cells are classified in the subclasses corresponding to their general function, e.g. mixing and mixers in general B01F, chemical or physical laboratory apparatus for general use B01L, apparatus for chemical or physical processes in general B01J.

Documents describing an apparatus or device and mentioning its use for culturing microorganisms, cells or tissue among other different uses are to be primarily classified in the subclasses corresponding to the general type of apparatus or device (e.g. B01F, B01L, B01J, etc.) with a secondary classification should be given in C12M.

C12M covers devices for controlling the product of the biomass production process taking place in the bioreactor. The analysis and determination of microorganisms and cells per se as well as apparatus for cellular observation or diagnostic are classified in C12Q and G01N.

References

Limiting references

This place does not cover:

Apparatus for culturing plant tissue	A01H 4/001
Apparatus for preserving living parts of the human or animal body	A01N 1/0242
Apparatus or devices for disinfecting or sterilising in general. Investigating the degree of sterilization	A61L 2/00, G01N 31/226
Chemical or physical processes in general. Chemical or physical laboratory apparatus for general use. Investigating or analysing biological material	B01J, B01L, G01N 33/48
Apparatus or devices for DNA or RNA technology	B01L 7/52, B01J 19/0046, C12N 15/1003

Apparatus for the biological treatment of water, waste water, sewage or sludge	C02F 3/00, C02F 11/00
Apparatus for preparing fertilisers characterised by the composting step	C05F 17/02
Apparatus for beer brewing	C12C
Apparatus for production of wine or vinegar	C12G, C12J 1/10
Fermentation processes	C12P
Apparatus for bioleaching of ores	C22B 3/18
Removing non-cellulose substances from cellulose-containing materials	D21C
Investigating individual particles	G01N 15/10
Testing or evaluating the effect of a chemical or biological compound involving human or animal cells	G01N 33/5005
Investigating or analysing biological material by immunoassay	G01N 33/5302
Automatic analysis	G01N 35/00

Special rules of classification

IPC groups C12M 1/00 - C12M 3/00 are not used in CPC.

The CPC groups C12M 21/00 - C12M 99/00 do not correspond to former or current IPC groups.

The concordance table ECLA:IPC under the title of the subclass should be disregarded.

All the inventive technical features of the bioreactor should be classified in the corresponding groups and subgroups of C12M. Additional information can also be classified in C12M and should be taken into account for proposing a classification in other subclasses.

The last place rule for classification is not used in C12M.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Bioreactor	Apparatus comprising at least a container where the microorganisms or cells are placed and which is put under conditions that make it suitable for the culturing of the microorganisms or cells.
Fermenter	Term used for bioreactors for culturing bacteria or yeast with the purpose of obtaining their metabolic or fermentation products

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

Bioreactor	Fermenter, Digester, Biodigester
Cell growth	Cell expansion, cell differentiation
Incubator	Apparatus for temperature control

C12M 21/00

{Bioreactors or fermenters specially adapted for specific uses (digesters for manure A01C 3/023; apparatus for PCR B01L 7/52; destroying or transforming solid waste B09B 3/00; methods for genetic engineering C12N 15/00, C12Q 1/68; nucleic acid amplification reactions C12Q 1/6844)}

References

Limiting references

This place does not cover:

Apparatus for biological treatment of water, waste water, sewage or sludge	C02F 3/00, C02F 11/00
Apparatus for preparing organic fertiliser by composting	C05F 17/02

Informative references

Attention is drawn to the following places, which may be of interest for search:

Digesters for manure	A01C 3/023
Apparatus for PCR	B01L 7/52
Destroying or transforming solid waste	B09B 3/00
Methods for genetic engineering	C12N 15/00, C12Q 1/68
Nucleic acid amplification reactions	C12Q 1/6844

Special rules of classification

The main group C12M 21/00 should not be used for classification.

The titles of the subgroups of C12M 21/00 form a non exhaustive list of the most common uses of bioreactors or fermenters covered by C12M. Documents relating to one of the uses enumerated in the subgroups of C12M 21/00 should be classified in the relevant subgroups. Documents on bioreactors or fermenters which are not related to one of the uses enumerated in the subgroups of C12M 21/00 should not be classified in C12M 21/00 or its subgroups at all.

Notwithstanding the classification according to the use in C12M 21/00, at least a further classification should be given in C12M 23/00 - C12M 99/00 according the technical features of the apparatus.

C12M 21/02

{Photobioreactors (culturing algae A01G 33/00, A01H 4/001, C12N 1/12)}

Definition statement

This place covers:

Bioreactors or fermenters using a source of illumination which is needed for achieving cellular growth.

Photobioreactors can be closed systems or open systems such ponds or basins.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Methods for culturing algae	A01G 33/00, C12N 1/12
Apparatus for plant tissue culture	A01H 4/001

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

PBR	Photobioreactor

C12M 21/04

{for producing gas, e.g. biogas (digesters for manure with production of biogas A01C 3/028, biological treatment of water, waste water or sewage C02F 3/00, C02F 11/02, preparation of natural gas or syngas C10L 3/06, C10L 3/10)}

References

Limiting references

This place does not cover:

Biological treatment of water, waste water, sewage or sludge	C02F 3/00, C02F 11/02

Informative references

Attention is drawn to the following places, which may be of interest for search:

Digesters for manure with production of biogas	A01C 3/028
Preparation of natural gas or syngas or other gaseous fuels	C10L 3/06, C10L 3/08, C10L 3/10

C12M 21/06

{for in vitro fertilization}

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

IVF	in vitro fertilization

C12M 21/08

{for producing artificial tissue or for ex-vivo cultivation of tissue (prostheses A61F 2/00, grafts A61L 27/00)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Prostheses, artificial parts of the human body	A61F 2/00
Grafts, transplant tissues	A61L 27/00

C12M 21/12

{for producing fuels or solvents (C12M 21/04 takes precedence; liquid carbonaceous fuels C10L 1/00, solid fuels C10L 5/00)}

References

Limiting references

This place does not cover:

Bioreactors or fermenters for producing gas	C12M 21/04

Informative references

Attention is drawn to the following places, which may be of interest for search:

Grafts, transplant tissues	A61L 27/00
Liquid carbonaceous fuels	C10L 1/00
Solid Fuels	C10L 5/00

C12M 21/16

{Solid state fermenters, e.g. for koji production}

Definition statement

This place covers:

Bioreactors or fermenters for solid state fermentation. Solid state fermentation is characterized by a content of at least 90% of dry matter. In the solid state fermentation the liquid phase is not continuous.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

SSF	Solid-state fermentation
SLF	Submerged liquid fermentation
Non submerged state fermenter	Solid-state fermenter

C12M 23/00

{Constructional details, e.g. recesses, hinges (flow directing inserts in C12M 27/18-C12M 27/24; apparatus for chemical or physical processes in general B01J, chemical or physical laboratory apparatus in general B01L)}

Definition statement

This place covers:

Apparatus or devices for culturing microorganisms or cells or for culturing tissues characterized by constructional details of the vessel of the bioreactor or characterized by parts with a mechanical function not covered by groups C12M 25/00 - C12M 41/00.

References

Limiting references

This place does not cover:

Flow directing inserts	C12M 27/18

Informative references

Attention is drawn to the following places, which may be of interest for search:

Apparatus for chemical or physical processes in general	B01J
Chemical or physical laboratory apparatus in general	B01L

C12M 23/02

{Form or structure of the vessel (large containers B65D 88/00)}

References

Limiting references

This place does not cover:

Large containers in general	B65D 88/00

C12M 23/04

{Flat or tray type, drawers (C12M 23/10, C12M 23/12, C12M 23/16 take precedence)}

References

Limiting references

This place does not cover:

Petri dish	C12M 23/10
Well or multiwell plates	C12M 23/12
Microfluidic devices; Capillary tubes	C12M 23/16

C12M 23/06

{Tubular (C12M 23/08, C12M 23/16 take precedence)}

References

Limiting references

This place does not cover:

Test tubes	C12M 23/08
Capillary tubes	C12M 23/16

C12M 23/08

{Flask, bottle or test tube}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Tubes and flasks for laboratory use in general	B01L 3/561 , B01L 3/08

C12M 23/10

{Petri dish (crystallising dishes B01L 3/06)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Crystallizing dishes in general	B01L 3/06

C12M 23/12

{Well or multiwell plates (C12M 25/04 takes precedence)}

References

Limiting references

This place does not cover:

Membranes or filters in combination with well or multiwell plates	C12M 25/04

Informative references

Attention is drawn to the following places, which may be of interest for search:

Multi-well filtration in general	B01L 3/50255

C12M 23/16

{Microfluidic devices; Capillary tubes (integrated microfluidic structures B01L 3/5027; microreactors B01J 19/0093)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Biochips	B01J 19/0046
Microreactors per se	B01J 19/0093
Integrated microfluidic devices in general	B01L 3/5027

C12M 23/18

{Open ponds; Greenhouse type or underground installations}

Definition statement

This place covers:

i.a. combinations of closed and open bioreactors.

References

Limiting references

This place does not cover:

Closed bioreactors which are situated in or on an open water space itself not used for culture	C12M 23/56

C12M 23/20

{Material Coatings (immunocoatings C12M 25/00)}

Definition statement

This place covers:

Materials and coatings for the materials other than immunocoatings.

References

Limiting references

This place does not cover:

Immunocoatings	C12M 25/00

C12M 23/22

{Transparent or translucent parts (glassware for laboratory use B01L 3/00)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Glassware for laboratory use in general	B01L 3/00

C12M 23/26

{flexible (flexible containers for laboratory use B01L 3/505)}

References

Limiting references

This place does not cover:

Bags	C12M 23/14

Informative references

Attention is drawn to the following places, which may be of interest for search:

Flexible containers for laboratory use in genera	B01L 3/505

C12M 23/40

{Manifolds; Distribution pieces (fluid transfer means B01L 3/563)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Fluid transfer means in general	B01L 3/563

C12M 23/42

{Integrated assemblies, e.g. cassettes or cartridges}

Definition statement

This place covers:

Bioreactors or fermenters built as integral units comprising all the different parts disposed in a compact unit. This compact unit comprising all parts of the bioreactor can be in the form of a cassette or a cartridge which could also be assembled with other devices.

C12M 23/44

{Multiple separable units; Modules}

Definition statement

This place covers:

Bioreactors or fermenters comprising separated or separable units which can be mounted or dismounted independently from each other.

References

Limiting references

This place does not cover:

Reaction vessels connected in series or in parallel	C12M 23/58

C12M 23/48

{Holding appliances; Racks; Supports (holding devices for laboratory apparatus B01L 9/00)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Holding devices for laboratory use in general	B01L 9/00

C12M 23/50

{Means for positioning or orientating the apparatus (C12M 41/08 takes precedence)}

References

Limiting references

This place does not cover:

Control of illumination by means of changing the orientation	C12M 41/08

C12M 23/52

{Mobile; Means for transporting the apparatus (transportable laboratories B01L 99/00)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Transportable laboratories in general	B01L 99/00

C12M 23/58

{Reaction vessels connected in series or in parallel (combinations of bioreactors with other apparatus, C12M 43/00)}

References

Limiting references

This place does not cover:

Combinations of bioreactors or fermenters with other apparatus (different from a bioreactor or fermenter)	C12M 43/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Connected reactors for chemical or physical processes in general	B01J 19/1818, B01J 19/1825, B01J 19/1856, B01J 19/1862, B01J 19/242, B01J 19/2425, B01J 19/2445, B01J 19/245

C12M 25/00

{Means for supporting, enclosing or fixing the microorganisms, e.g. immunocoatings}

Definition statement

This place covers:

Apparatus, devices or systems for culturing microorganisms or cells or for culturing tissues characterized by the means for supporting the organism to be cultured, e.g. immunological coatings of the walls of the vessel.

Relationships with other classification places

Note that C12N 5/0068 covers supports for cell culture "per se" and C12M 25/00 and subgroups covers these supports when they form part of a bioreactor or fermenter.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Apparatus in general for separation processes using semipermeable membranes	B01D 63/00
Fluidized bed apparatus	B01J 8/18
Packing elements for chemical or physical processes	B01J 19/32

C12M 25/02

{Membranes; Filters (filters or filtration in general B01D 24/00-B01D 41/00)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Filters or filtration in general	B01D 24/00 - B01D 41/00

C12M 25/10

{Hollow fibers or tubes (hollow fiber modules in general B01D 63/02)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Hollow fibre modules in general	B01D 63/02

C12M 25/14

{Scaffolds; Matrices (in general C12N 5/0068)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Substrate, supports and/or coatings for cell culture	C12N 5/0068, C12N 2533/00

C12M 25/16

{Particles; Beads; Granular material; Encapsulation (chemical or physical processes conducted in the presence of fluids and solid particles B01J 8/00)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Chemical or physical processes conducted in the presence of fluids and solid particles	B01J 8/00

C12M 25/20

{Fluidized bed (in chemical or physical processes B01J 8/18)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Fluidized bed apparatus in chemical or physical processes	B01J 8/18

C12M 27/00

{Means for mixing, agitating or circulating fluids in the vessel (by introduction of gas C12M 29/06, C12M 29/14, mixing in general or mixers per se B01F; mixing in apparatus for chemical or physical processes B01J)}

Definition statement

This place covers:

Bioreactors or fermenters characterized by means for mixing, agitating or fluid circulation.

Relationships with other classification places

Mixing and mixers in general are covered by B01F.

References

Limiting references

This place does not cover:

Bioreactors or fermenters characterized by means for mixing, agitating or fluid circulation by introduction of gas when the gas is not introduced through an stirrer	C12M 29/06, C12M 29/14

Informative references

Attention is drawn to the following places, which may be of interest for search:

Digesters for manure with mixing means	A01C 3/026
Mixing in apparatus for chemical or physical processes	B01J

C12M 27/02

{Stirrer or mobile mixing elements}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Mixing with completely immersed stirring elements	B01F 3/04531
Stirrers in general	B01F 7/00008
Stirred reactor in general	B01J 19/0066

C12M 27/04

{with introduction of gas through the stirrer or mixing element}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Mixing in general with introduction of gas through the stirrer	B01F 3/04539

C12M 27/06

{with horizontal or inclined stirrer shaft or axis}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Mixing in general with stirrer rotating around an horizontal axis	B01F 3/04588

C12M 27/10

{Rotating vessel}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Mixers with rotating receptacles per se	B01F 9/00
Rotating reactors in general	B01J 19/28

C12M 27/16

{Vibrating; Shaking; Tilting}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Mixers in general with shaking, oscillating or vibrating mechanisms	B01F 11/00
In chemical or physical processes in general	B01J 19/285

C12M 27/20

{Baffles; Ribs; Ribbons; Auger vanes}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Baffles in general	B01F 15/00915
Baffles in reactors for physical or chemical processes	B01J 19/006

C12M 29/00

{Means for introduction, extraction or recirculation of materials, e.g. pumps (pumps per se F04B)}

Definition statement

This place covers:

Means for introduction or extraction of materials in or from a bioreactor or fermenter. These materials can be in gaseous, liquid or solid form and do not include microorganisms or biomass.

Means for extraction and reintroduction (i.e. recirculation) of materials other than microorganisms or biomass are also covered in this section.

References

Limiting references

This place does not cover:

Pumps per se	F04B

C12M 29/02

{Percolation}

Definition statement

This place covers:

Bioreactors or fermenters with a recirculation of filtered culture medium not containing microorganisms or cells to the same vessel or to a different bioreactor vessel.

C12M 29/06

{Nozzles; Sprayers; Spargers; Diffusers (per se B01F 3/04106, B01J 19/26)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Mixing in general by use of nozzles, diffusers or sprayers	B01F 3/04106, B01F 5/02, B01F 5/04, B01F 5/18, B01J 19/26

C12M 29/16

{Hollow fibers (hollow fiber modules in general B01D 63/02)}

Definition statement

This place covers:

Hollow fibers used as means for introduction or extraction of materials in the bioreactor or fermenter.

References

Limiting references

This place does not cover:

Hollow fibers used as means for supporting the microorganims.	C12M 25/10

Informative references

Attention is drawn to the following places, which may be of interest for search:

Hollow fibre modules in general	B01D 63/02

C12M 29/18

{External loop; Means for reintroduction of fermented biomass or liquid percolate (loop type reactors for chemical or physical processes B01J 19/2435)}

Definition statement

This place covers:

Bioreactors or fermenters with systems for recirculation and reintroduction of biomass or culture medium containing microorganisms or cells.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Loop type reactors for chemical and physical processes in general	B01J 19/2435

C12M 29/20

{Degassing; Venting; Bubble traps (means for collection or storage of gas C12M 23/36; gas collection apparatus for laboratory use B01L 5/02)}

References

Limiting references

This place does not cover:

Means for collection or storage of gas	C12M 23/36

Informative references

Attention is drawn to the following places, which may be of interest for search:

Gas collection apparatus for laboratory use in general	B01L 5/02

C12M 31/00

{Means for providing, directing, scattering or concentrating light (C12M 41/06 takes precedence)}

References

Limiting references

This place does not cover:

Means for control of illumination	C12M 41/06

C12M 31/12

{Rotating light emitting elements}

Definition statement

This place covers:

Bioreactors or fermenters with rotating light emitting and/or light transmitting elements.

C12M 33/00

{Means for introduction, transport, positioning, extraction, harvesting, peeling or sampling of biological material in or from the apparatus (chemical or physical laboratory apparatus in general B01L, devices for taking cell samples A61B 10/0045, withdrawing or distributing predetermined quantities of fluid B01L 99/00)}

Definition statement

This place covers:

Means for introduction into the bioreactor or extraction from the bioreactor of biomass comprising the microorganisms or cells that are to be cultured or have been already cultured.

Means for shifting the biomass or positioning the biomass inside the bioreactor.

References

Limiting references

This place does not cover:

Loop means for reintroduction of biomass	C12M 29/18
Sampling of air borne microorganisms	G01N 33/497

Informative references

Attention is drawn to the following places, which may be of interest for search:

Devices for taking samples of body liquids	A61B 10/0045
Chemical or physical laboratory apparatus in general	B01L
Withdrawing or distributing predetermined quantities of fluid	B01L 3/0289

C12M 33/02

{by impregnation, e.g. using swabs or loops (fluid transport using swabs B01L 3/5029)}

Definition statement

This place covers:

Absorbing means for transferring liquids.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Fluid transport using swabs	B01L 3/5029

C12M 33/04

{by injection or suction, e.g. using pipettes, syringes, needles (pipettes in general B01L 3/02)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Pipettes in general	B01L 3/02

C12M 33/10

{by centrifugation (centrifuges in general B04B); Cyclones (cyclones in general B04C)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Centrifuges in general	B04B
Cyclones in general	B04C

C12M 35/00

{Means for application of stress for stimulating the growth of microorganisms or the generation of fermentation or metabolic products; Means for electroporation or cell fusion (machines for extracting juice from animal or plant tissue by electroplasmolysis A23N 1/006, processes employing electric or wave energy B01J 19/08; treatment of microorganisms or enzymes with electrical or wave energy C12N 13/00; methods for cell fusion C12N 15/02; introduction of foreign genetic material C12N 15/87)}

References

Limiting references

This place does not cover:

Methods for cell fusion	C12N 15/02
Introduction of foreign genetic material	C12N 15/87

Informative references

Attention is drawn to the following places, which may be of interest for search:

Machines or apparatus for extracting juice from animal or vegetable tissue by electroplasmolysis	A23N 1/006
Processes employing electric or wave energy	B01J 19/08
Treatment of microorganisms or enzymes with electrical or wave energy	C12N 13/00

C12M 35/06

{Magnetic means (C12M 35/02 takes precedence)}

References

Limiting references

This place does not cover:

Application of stress on microorganisms or cells or electroporation by electromagnetic means	C12M 35/02

C12M 37/00

{Means for sterilizing, maintaining sterile conditions or avoiding chemical or biological contamination (C12M 23/38 takes precedence; filtration in general and filters per se B01D 24/00-B01D 41/00; autoclaves B01J 3/04; treatment of microorganisms with electrical or wave energy C12N 13/00)}

References

Limiting references

This place does not cover:

Caps or covers	C12M 23/38

Informative references

Attention is drawn to the following places, which may be of interest for search:

Filters and filtration in general	B01D 24/00 - B01D 41/00
Autoclaves	B01J 3/04
Treatment of microorganisms with electrical or wave energy	C12N 13/00

C12M 37/04

{Seals}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Seals for reactors in general	B01J 19/0073
Seals for laboratory containers	**B01L3/00B4**
Seals in general	F16L

C12M 37/06

{Means for testing the completeness of the sterilization (testing for sterility conditions C12Q 1/22)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sterilizing in general	A61L
Testing for sterility conditions	C12Q 1/22

C12M 39/00

{Means for cleaning the apparatus or avoiding unwanted deposits of microorganisms (apparatus for cleaning laboratory receptacles or instruments B01L 99/00; cleaning in general B08B)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Apparatus for cleaning laboratory receptacles or instruments	B01L 99/00
Cleaning in general	B08B

C12M 41/00

{Means for regulation, monitoring, measurement or control, e.g. flow regulation (controlling or regulating chemical, physical or physicochemical processes B01J 19/0006; heating or cooling apparatus for laboratory use B01L 7/00; electro optical investigation of individual particles, flow cytometers G01N 15/14; automatic analysis G01N 35/00; controlling or regulating in general G06N)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Controlling or regulating chemical, physical or physico-chemical processes	B01J 19/0006
Heating or cooling apparatus for laboratory use	B01L 7/00
Electro-optical investigation of individual particles, flow cytometers	G01N 15/14
Automatic analysis	G01N 35/00
Controlling or regulating in general	**G05N**

C12M 41/02

{of foam (foam prevention during gasification of liquids B01D 19/02)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Foam prevention during degasification of liquids	B01D 19/02

C12M 41/04

{Means for foam enhancement (making foam by mixing B01F 3/04446)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Making foam by mixing	B01F 3/04446

C12M 41/12

{of temperature (controlling the temperature of chemical or physical processes B01J 19/0013, heating or cooling apparatus for laboratory use B01L 7/00)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Digesters for manure with heat recuperation means	A01C 3/025
Controlling the temperature of chemical or physical processes	B01J 19/0013
Heating or cooling apparatus for laboratory use	B01L 7/00

C12M 41/14

{Incubators; Climatic chambers (per se B01L 1/00)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Enclosures or chambers for laboratory use	B01L 1/00

C12M 41/36

{of biomass, e.g. colony counters or by turbidity measurements (electrooptical investigation of individual particles G01N 15/14, flow cytometers G01N 15/1404)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Electrooptical investigation of individual particles	G01N 15/14
Flow cytometers	G01N 15/1404

C12M 41/48

{Automatic or computerized control (automatic analysis G01N 35/00)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Automatic analysis	G01N 35/00

C12M 43/00

{Combinations of bioreactors or fermenters with other apparatus}

Definition statement

This place covers:

Bioreactors or fermenters characterized in that they are connected to other apparatus which are not bioreactors or fermenters.

References

Limiting references

This place does not cover:

Bioreactors or fermenters connected with other bioreactors or fermenters	C12M 23/58

C12M 43/04

{Bioreactors or fermenters combined with combustion devices or plants, e.g. for carbon dioxide removal (C12M 43/06 takes precedence; recovery of carbon dioxide C12F 3/02)}

References

Limiting references

This place does not cover:

Photobioreactors combined with devices or plants for gas production	C12M 43/06

Informative references

Attention is drawn to the following places, which may be of interest for search:

Recovery of carbon dioxide	C12F 3/02

C12M 45/00

{Means for pre-treatment of biological substances}

Definition statement

This place covers:

Means for treating the biomass before introducing it into the bioreactor or fermenter and before starting the culturing process. These means are normally situated outside the bioreactor or fermenter.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Preservation of living parts of the human or animal body	A01N 1/02

C12M 45/02

{by mechanical forces; Stirring; Trituration; Comminuting (crushing, pulverizing, disintegrating in general B02C)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Cutting apparatus specially adapted for plant tissue culture	A01H 4/003
Crushing, pulverizing, disintegrating in general	B02C

C12M 45/05

{by centrifugation (centrifuges in general B04B)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Centrifuges in general	B04B

C12M 45/22

{Means for packing or storing viable microorganisms (casings for storing cell samples A61B 10/0096, preservation of living parts of the human or animal body A01N 1/02)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Preservation of living parts of the human or animal body	A01N 1/02
Casings for storing cell samples	A61B 10/0096

C12M 47/00

{Means for after-treatment of the produced biomass or of the fermentation or metabolic products, e.g. storage of biomass (filters in general B01D 23/00-B01D 41/00)}

Definition statement

This place covers:

Means for treating the biomass that has been already cultured. These means are normally situated outside the bioreactor or fermeneter.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Preservation of living parts of the human or animal body	A01N 1/02
Filters and filtration in general	B01D 23/00 - B01D 41/00

C12M 47/02

{Separating microorganisms from the culture medium; Concentration of biomass (separating microorganisms from their culture media C12N 1/02)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Separating microorganisms from their culture media	C12N 1/02

C12M 47/04

{Cell isolation or sorting (purging biological preparations of unwanted cells C12N 5/0081, determining the presence or kind of microorganism C12Q 1/04)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Purging biological preparations of unwanted cells	C12N 5/0081
Determining the presence or kind of microorganism	C12Q 1/04

C12M 47/06

{Hydrolysis; Cell lysis; Extraction of intracellular or cell wall material (lysis of microorganisms C12N 1/06; extracting or separating nucleic acids from biological samples C12N 15/1003)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Lysis of microorganisms	C12N 1/06
Extracting or separating nucleic acids from biological samples	C12N 15/1003

C12M 47/10

{Separation or concentration of fermentation products (bioreactors combined with means for distillation or extraction of liquid fuel C12M 43/02)}

References

Limiting references

This place does not cover:

Bioreactors or fermenters combined with means for liquid fuel extraction	C12M 43/02

C12M 47/12

{Purification (C12M 47/04 takes precedence)}

References

Limiting references

This place does not cover:

Cell isolation or sorting	C12M 47/04

C12M 47/16

{Sterilization (autoclaves in general B01J 3/04)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Autoclaves in general	B01J 3/04

C12M 47/18

{Gas cleaning, e.g. scrubbers; Separation of different gases (separating dispersed particles from gases or vapours B01D 45/00; separation of gases or vapours B01D 53/00; gas washing apparatus for laboratory uses B01L 5/04)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Separating dispersed particles from gases or vapours	B01D 45/00
Separation of gases or vapours	B01D 53/00
Gas washing apparatus for laboratory use	B01L 5/04

C12M 47/20

{Heating or cooling (heating or cooling apparatus for laboratory uses B01L 7/00)}

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Heating or cooling apparatus for laboratory use	B01L 7/00

CPC COOPERATIVE PATENT CLASSIFICATION

C CHEMISTRY; METALLURGY

(NOTES omitted)

CHEMISTRY

C12 BIOCHEMISTRY; BEER; SPIRITS; WINE; VINEGAR; MICROBIOLOGY; ENZYMOLOGY; MUTATION OR GENETIC ENGINEERING

(NOTES omitted)

C12R PROCESSES USING MICROORGANISMS

NOTE

The basis for the bacteria terminology is "Bergey's Manual of Determinative Bacteriology", Eighth Edition, 19/75.

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
   C12R 1/92-C12R 1/94 covered by
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00 Processes using microorganisms
1/01 . using bacteria or actinomycetales
1/02 . . Acetobacter
1/025 . . Achromobacter
1/03 . . Actinomadura
1/04 . . Actinomyces
1/045 . . Actinoplanes
1/05 . . Alcaligenes
1/06 . . Arthrobacter
1/065 . . Azotobacter
1/07 . . Bacillus
1/075 . . . {Bacillus thuringiensis}
1/08 . . . Bacillus brevis
1/085 . . . Bacillus cereus
1/09 . . . Bacillus circulans
1/10 . . . Bacillus licheniformis
1/11 . . . Bacillus megaterium
1/12 . . . Bacillus polymyxa
1/125 . . . Bacillus subtilis
1/13 . . Brevibacterium
1/14 . . Chainia
1/145 . . Clostridium
1/15 . . Corynebacterium
1/16 . . . Corynebacterium diphtheriae
1/165 . . . Corynebacterium poinsettiae
1/17 . . . Corynebacterium pyogenes
1/18 . . Erwinia
1/185 . . Escherichia
1/19 . . . Escherichia coli
1/20 . . Flavobacterium
1/21 . . Haemophilus
1/22 . . Klebsiella
1/225 . . Lactobacillus
1/23 . . . Lactobacullus acidophilus
1/24 . . . Lactobacillus brevis
1/245 . . . Lactobacillus casei
1/25 . . . Lactobacillus plantarum
1/26 . . Methylomonas
1/265 . . Micrococcus
1/27 . . . Micrococcus flavus
1/28 . . . Micrococcus glutamicus
1/285 . . . Micrococcus lysodeikticus
1/29 . . Micromonospora
1/30 . . . Micromonospora chalcea
1/31 . . . Micromonospora purpurea
1/32 . . Mycobacterium
1/325 . . . Mycobacterium avium
1/33 . . . Mycobacterium fortuitum
1/34 . . . Mycobacterium smegmatis
1/35 . . Mycoplasma
1/36 . . Neisseria
1/365 . . Nocardia
1/37 . . Proteus
1/38 . . Pseudomonas
1/385 . . . Pseudomonas aeruginosa
1/39 . . . Pseudomonas fluorescens
1/40 . . . Pseudomonas putida
1/41 . . Rhizobium
1/42 . . Salmonella
1/425 . . Serratia
1/43 . . . Serratia marcescens
1/44 . . Staphylococcus
1/445 . . . Staphylococcus aureus
1/45 . . . Staphylococcus epidermidis
1/46 . . Streptococcus; {Enterococcus; Lactococcus}
1/465 . . Streptomyces
1/47 . . . Streptomyces albus
1/48 . . . Streptomyces antibioticus
1/485 . . . Streptomyces aureofaciens
1/49 . . . Streptomyces aureus
1/50 . . . Streptomyces bikiniensis
1/51 . . . Streptomyces candidus

1/52 . . . Streptomyces chartreusis
1/525 . . . Streptomyces diastatochromogenes
1/53 . . . Streptomyces filipinensis
1/54 . . . Streptomyces fradiae
1/545 . . . Streptomyces griseus
1/55 . . . Streptomyces hygroscopicus
1/56 . . . Streptomyces lavendulae
1/565 . . . Streptomyces lincolnensis
1/57 . . . Streptomyces noursei
1/58 . . . Streptomyces olivaceus
1/585 . . . Streptomyces platensis
1/59 . . . Streptomyces rimosus
1/60 . . . Streptomyces sparosgenes
1/61 . . . Streptomyces venezuelae
1/62 . . Streptosporangium
1/625 . . Streptoverticillium
1/63 . . Vibrio
1/64 . . Xanthomonas
1/645 . using fungi
1/65 . . Absidia
1/66 . . Aspergillus
1/665 . . . Aspergillus awamori
1/67 . . . Aspergillus flavus
1/68 . . . Aspergillus fumigatus
1/685 . . . Aspergillus niger
1/69 . . . Aspergillus oryzae
1/70 . . . Aspergillus ustus
1/71 . . . Aspergillus wentii
1/72 . . Candida
1/725 . . . Candida albicans
1/73 . . . Candida lipolytica
1/74 . . . Candida tropicalis
1/745 . . Cephalosporium
1/75 . . . Cephalosporium acremonium
1/76 . . . Cephalosporium coerulescens
1/765 . . . Cephalosporium crotocinigenum
1/77 . . Fusarium
1/78 . . Hansenula
1/785 . . Mucor
1/79 . . Paecilomyces
1/80 . . Pencillium
1/81 . . . Pencillium brevi
1/82 . . . Penicillium chrysogenum
1/825 . . . Penicillium notatum
1/83 . . . Penicillium patulum
1/84 . . Pichia
1/845 . . Rhizopus
1/85 . . Saccharomyces
1/86 . . . Saccharomyces carlsbergensis
1/865 . . . Sachharomyces cerevisiae
1/87 . . . Saccharomyces lactis
1/88 . . Torulopsis
1/885 . . Trichoderma
1/89 . using algae
1/90 . using protozoa
1/91 . using viruses or cell lines

CPC COOPERATIVE PATENT CLASSIFICATION

C CHEMISTRY; METALLURGY
(NOTES omitted)

CHEMISTRY

C12 BIOCHEMISTRY; BEER; SPIRITS; WINE; VINEGAR; MICROBIOLOGY; ENZYMOLOGY; MUTATION OR GENETIC ENGINEERING
(NOTES omitted)

C12G WINE; OTHER ALCOHOLIC BEVERAGES; PREPARATION THEREOF (beer C12C)

WARNING

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

C12G 1/022	covered by	C12G 1/0203
C12G 1/024	covered by	C12G 1/0209
C12G 1/026	covered by	C12G 1/02
C12G 1/028	covered by	C12G 1/0213
C12G 1/032	covered by	C12G 1/0216
C12G 1/036	covered by	C12G 1/0206
C12G 1/067	covered by	C12G 1/06
C12G 1/073	covered by	C12G 1/06, C12G 1/064
C12G 1/09	covered by	C12G 1/08
C12G 1/10	covered by	C12G 1/00, C12H 1/10, C12H 1/18
C12G 1/12	covered by	C12G 1/00

1/00 Preparation of wine or sparkling wine

WARNING

Group C12G 1/00 is impacted by reclassification into groups C12G 1/06 and C12G 1/14.

Groups C12G 1/00, C12G 1/06, and C12G 1/14 should be considered in order to perform a complete search.

1/005 . {Methods or means to load or unload, to weigh or to sample the vintage; Replenishing; Separation of the liquids from the solids before or after fermentation}

1/02 . Preparation of must from grapes; Must treatment and fermentation

1/0203 . . {by microbiological or enzymatic treatment}

1/0206 . . {using a home wine making vessel}

1/0209 . . {in a horizontal or rotatably mounted vessel (C12G 1/0206 takes precedence)}

1/0213 . . {with thermal treatment of the vintage (C12G 1/0206 takes precedence)}

1/0216 . . {with recirculation of the must for pomage extraction}

1/04 . . Sulfiting the must; Desulfiting

1/06 . Preparation of sparkling wine; Impregnation of wine with carbon dioxide (methods for reducing the alcohol content after fermentation C12H 3/00; methods for increasing the alcohol content after fermentation C12H 6/00)

WARNING

Group C12G 1/06 is incomplete pending reclassification of documents from group C12G 1/00.

Group C12G 1/06 is also impacted by reclassification into groups C12H 3/00, C12H 3/02, C12H 3/04, C12H 6/00, C12H 6/02, and C12H 6/04.

All groups listed in this Warning should be considered in order to perform a complete search.

1/062 . . {Agitation, centrifugation, or vibration of bottles}

1/064 . . {using enclosed yeast}

1/08 . Removal of yeast ("degorgeage")

1/14 . Preparation of wine or sparkling wine with low alcohol content (methods for reducing the alcohol content after fermentation C12H 3/00)

WARNING

Group C12G 1/14 is incomplete pending reclassification of documents from group C12G 1/00.

Groups C12G 1/00 and C12G 1/14 should be considered in order to perform a complete search.

3/00 Preparation of other alcoholic beverages

3/005 . Solid or pasty alcoholic beverage-forming compositions

3/02 . by fermentation

WARNING

Group C12G 3/02 is impacted by reclassification into groups C12G 3/021, C12G 3/022, C12G 3/023, C12G 3/024, C12G 3/025, and C12G 3/026.

All groups listed in this Warning should be considered in order to perform a complete search.

3/021 . . of botanical family Poaceae, e.g. wheat, millet, sorghum, barley, rye, or corn

WARNING

Group C12G 3/021 is incomplete pending reclassification of documents from groups C12G 3/02 and C12G 3/025.

Groups C12G 3/02, C12G 3/025, and C12G 3/021 should be considered in order to perform a complete search.

3/022 . . . of botanical genus Oryza, e.g. rice

WARNING

Group C12G 3/022 is incomplete pending reclassification of documents from groups C12G 3/02 and C12G 3/025.

Groups C12G 3/02, C12G 3/025, and C12G 3/022 should be considered in order to perform a complete search.

3/023 . . of botanical family Solanaceae, e.g. potato

WARNING

Group C12G 3/023 is incomplete pending reclassification of documents from groups C12G 3/02 and C12G 3/025.

Groups C12G 3/02 and C12G 3/025 and C12G 3/023 should be considered in order to perform a complete search.

3/024 . . of fruits other than botanical genus Vitis

WARNING

Group C12G 3/024 is incomplete pending reclassification of documents from group C12G 3/02 and C12G 3/025.

Groups C12G 3/02, C12G 3/025, and C12G 3/024 should be considered in order to perform a complete search.

3/025 . . Low-alcohol beverages (methods for reducing the alcohol content after fermentation C12H 3/00)

WARNING

Group C12G 3/025 is incomplete pending reclassification of documents from group C12G 3/02.

Group C12G 3/025 is also impacted by reclassification into groups C12G 3/021, C12G 3/022, C12G 3/023, C12G 3/024, and C12G 3/026.

All groups listed in this Warning should be considered in order to perform a complete search.

3/026 . . with health-improving ingredients, e.g. flavonoids, flavones, polyphenols or polysaccharides, added before or during the fermentation stage; with flavouring ingredients added before or during the fermentation stage

WARNING

Group C12G 3/026 is incomplete pending reclassification of documents from groups C12G 3/02 and C12G 3/025.

Groups C12G 3/02, C12G 3/025 and C12G 3/026 should be considered in order to perform a complete search.

3/04 . by mixing, e.g. for preparation of liqueurs

WARNING

Group C12G 3/04 is impacted by reclassification into group C12G 3/05 and C12G 3/055.

Groups C12G 3/04, C12G 3/05 and C12G 3/055 should be considered in order to perform a complete search.

3/05 . . with health-improving ingredients, e.g. flavonoids, flavones, polyphenols or polysaccharides

WARNING

Group C12G 3/05 is incomplete pending reclassification of documents from group C12G 3/04.

Groups C12G 3/04 and C12G 3/05 should be considered in order to perform a complete search.

3/055 . . . extracted from plants

WARNING

Group C12G 3/055 is incomplete pending reclassification of documents from group C12G 3/04.

Groups C12G 3/04 and C12G 3/055 should be considered in order to perform a complete search.

3/06 . . with flavouring ingredients

3/07 . . . Flavouring with wood extracts, e.g. generated by contact with wood; Wood pretreatment therefor

3/08 . by methods for altering the composition of fermented solutions or alcoholic beverages not provided for in groups C12G 3/02 - C12G 3/07 (methods for reducing the alcohol content of fermented solutions or alcoholic beverages C12H 3/00; methods for increasing the alcohol content of fermented solutions or alcoholic beverages C12H 6/00)

WARNING

Group C12G 3/08 is impacted by reclassification into groups C12H 3/00 and C12H 3/02.

Groups C12G 3/08, C12H 3/00 and C12H 3/02 should be considered in order to perform a complete search.

2200/00 Special features

2200/05 . Use of particular microorganisms in the preparation of wine

2200/11 . Use of genetically modified microorganisms in the preparation of wine

2200/15 . Use of particular enzymes in the preparation of wine

2200/21 . Wine additives, e.g. flavouring or colouring agents

2200/25 . Preparation of wine or sparkling wine in vessels with movable equipment for mixing the content

2200/31 . Wine making devices having compact design or adapted for home use

C12H

PASTEURISATION, STERILISATION, PRESERVATION, PURIFICATION, CLARIFICATION OR AGEING OF ALCOHOLIC BEVERAGES; METHODS FOR ALTERING THE ALCOHOL CONTENT OF FERMENTED SOLUTIONS OR ALCOHOLIC BEVERAGES (simulation ageing by flavouring C12G 3/06)

Relationships with other classification places

Beer per se, brewing of beer, fermentation processes and post fermentation treatments for beer are classified in subclass C12C.

C12C deals with the process of making beer with a low alcohol content

Low alcohol beer is classified in C12C 12/04.

Low alcohol wine is classified in C12G 1/14 and other low alcohol beverages are classified in C12G 3/00.

Post-fermentation treatment such as carbonation is subject matter of this subclass but is classified in C12H when combined with subject matter of that subclass.

When classifying in this subclass, classification is also made in group B01D 15/08 insofar as subject matter of general interest relating to chromatography is concerned.

References

Limiting references

This place does not cover:

Simulation of ageing by flavouring	C12G 3/06

Informative references

Attention is drawn to the following places, which may be of interest for search:

Preservation of foods or foodstuffs, in general	A23L 3/00
Distillation or rectification of fermented solutions to obtain pure alcohol	B01D 3/00
Recovery of by-products from wine or beer	C12F 3/06
Preparation of alcoholic beverages other than wine or beer by varying the composition of fermented solutions	C12G 3/08

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Adsorption	Capability of all solid substances to attract to their surfaces molecules of gases or solutions with which they are in contact
Clarification	Removal of the suspended material during aging
Lagering	Ageing or ripening of the beer by storing. During lagering, fermentation and clarification take place
Sulfiting	Process for adding sulfur dioxide (SO_2)

C12H 1/00

Pasteurisation, sterilisation, preservation, purification, clarification, or ageing of alcoholic beverages (simulating ageing by flavouring C12G 3/06)

Definition statement

This place covers:

Methods as well as apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification, ageing of alcoholic beverages (typically wine, beer, distilled alcoholic beverages).

References

Limiting references

This place does not cover:

Preparation of beer	C12C
Simulation of ageing by flavouring	C12C 3/06
Recovery of by-products from fermented solutions (in particular derived from the preparation of alcoholic beverages)	C12F
Preparation of wine and alcoholic beverages other than beer and wine	C12G
Pitching / depitching machines and cellar tools	C12L

Informative references

Attention is drawn to the following places, which may be of interest for search:

Subject-matter of general interest relating to chromatography	B01D 15/08

Special rules of classification

Filtration is always to be classified in C12H 1/063, irrespective of precipitation, adsorption, or the nature of the material to be separated.

C12H 1/003

{by a biochemical process}

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages, by a biochemical process.

C12H 1/006

{using bacterial cultures}

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages, wherein bacterial cultures are used.

C12H 1/02

combined with removal of precipitate or added materials, e.g. adsorption material

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages, wherein the precipitate, e.g. protein haze or colloidal haze, and/or added materials, e.g. PVPP or silica gel is/are removed.

References

Limiting references

This place does not cover:

Removal of yeast from (sparkling) wine by "degorgeage"	C12G 1/08

C12H 1/04

with the aid of ion-exchange material or inert clarification material, e.g. adsorption material

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages, wherein ion-exchange and/or inert clarification material is removed.

C12H 1/0408

{with the aid of inorganic added material}

Definition statement

This place covers:

Methods as well as apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages e.g. wine, beer or distilled alcoholic beverages, wherein inorganic added clarification material is removed.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Silicon derived materials used in clarification, e.g. silica hydrogels and xerogels	C01B 33/00

Synonyms and Keywords

In patent documents, the following words/expressions are often used with the meaning indicated:

Silica gel	Silica hydrogel

Xerogel	Silica xerogel

C12H 1/0416

{with the aid of organic added material}

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages, wherein added organic clarification material is removed.

C12H 1/0424

{with the aid of a polymer}

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages, wherein added polymeric organic clarification material is removed.

References

Limiting references

This place does not cover:

Use of ion-exchange material (in so far as the ion-exchange functionality is of essential importance)	C12H 1/0432

C12H 1/0432

{with the aid of ion-exchange material}

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages, wherein an ion-exchange material is removed.

Special rules of classification

C12H 1/0432 takes precedence over C12H 1/0408, C12H 1/0416 and C12H 1/0424, in so far as the ion-exchange functionality is of essential importance (factually and/or according to the disclosed information)

Synonyms and Keywords

In patent documents various trademarks are often used: Amberlite or Dowex

C12H 1/06

Precipitation by physical means, e.g. by irradiation, vibrations

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g wine, beer or distilled alcoholic beverages, wherein precipitate is generated by physical means (in particular by irradiation and/or vibration) and/or separated by filtration.

Special rules of classification

Until further notice, a large interpretation for the term "irradiation " is given. For instance the application of electric fields and magnetic fields is covered.

C12H 1/061

{Separation by centrifugation}

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages, wherein precipitate is generated by physical means, in particular by irradiation and/or vibration, and removed by centrifugation.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Centrifuges in general	B04B

C12H 1/063

{Separation by filtration}

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages, wherein

(a) precipitation is generated by physical means, in particular by irradiation and/or vibration, and removed by filtration, or (more generally)

(b) filtration is performed, irrespective of precipitation, adsorption, or the nature of the material to be separated.

References

Limiting references

This place does not cover:

Post fermentation treatment of beer involving filtration	C12C 11/11
Yeast removal in wine or champagne production by degorgage type methods	C12G 1/08

C12H 1/08

by heating

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages, wherein precipitate is generated by heating.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Boiling and cooling of beer wort (whereby haze is formed)	C12C 7/20, C12C 7/24

C12H 1/10

Precipitation by chemical means

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages, wherein precipitate is generated by chemical means.

C12H 1/12

without precipitation

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages not relying on or involving precipitation and/or removal of added materials.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Pasteurisation with non-precipitating compounds, by heating	C12H 1/14, C12H 1/18

C12H 1/14

with non-precipitating compounds, e.g. sulfiting; Sequestration, e.g. with chelate-producing compounds

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages not relying on or involving precipitation and/or removal of added materials, wherein non-precipitating compounds e.g. sulfite or chelating agents, are used.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Preserving agents for non-alcoholic beverages	A23L 2/44
Preserving agents for beer	C12C 5/02
Sulfiting must in winemaking	C12G 1/04

C12H 1/16

by physical means, e.g. irradiation

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages not relying on or involving precipitation and/or removal of added materials, wherein physical means (in particular irradiation and/or vibration) are applied.

C12H 1/165

{by irradiation}

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages not relying on or involving precipitation and/or removal of added materials, wherein irradiation is applied.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Preservation of non-alcoholic beverages by heating by irradiation or electric treatment	A23L 2/48
Preservation of non-alcoholic beverages by irradiation or electric treatment without heating	A23L 2/50

Special rules of classification

Until further notice, a large interpretation for the term "irradiation " is given. For instance the application of electric fields and magnetic fields is covered.

C12H 1/18

by heating

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages not relying on or involving precipitation and/or removal of added materials, wherein heating is applied.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Preservation of non-alcoholic beverages by heating	A23L 2/46

C12H 1/20

in containers allowing for expansion of the contents

Definition statement

This place covers:

Methods or apparatus pertaining to pasteurisation, sterilisation, preservation, purification, clarification or ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages not relying on or involving precipitation and/or removal of added materials, wherein heating is applied and a flexible container allowing for expansion of the contents is used.

C12H 1/22

Ageing or ripening by storing, e.g. lagering of beer

Definition statement

This place covers:

Methods for ageing of alcoholic beverages, e.g. wine, beer or distilled alcoholic beverages.

Apparatus, e.g. tanks or barrels, specifically adapted for ageing of alcoholic beverages.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Containers	B65D
Beer flavouring preparations	C12C 5/026

Special rules of classification

If flavouring with wood material and storing are essential aspects, both symbols C12H 1/22 and C12G 3/07 should be given.

C12H 3/04

using semi-permeable membranes

Definition statement

This place covers:

Methods for reducing the alcohol content of fermented solutions or alcoholic beverages to obtain low alcohol or non-alcoholic beverages other than beer, wine (derived from grapes) or sparkling wine (derived from grapes) wherein membranes are used (e.g. ultrafiltration, dialysis, electrodialysis, osmosis, reverse osmosis), and apparatus specifically adapted therefor.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Reverse osmosis process	B01D 65/00
Semi-permeable membrane for separation processes	B01D 67/00 - B01D 71/00

C12H 6/00

Methods for increasing the alcohol content of fermented solutions or alcoholic beverages

Definition statement

This place covers:

Methods for preparing alcoholic beverages other than beer, wine (derived from grapes) or sparkling wine (derived from grapes), by increasing the alcohol content;

Apparatus specifically adapted therefor.

C12H 6/02

by distillation

Definition statement

This place covers:

Methods for preparing alcoholic beverages other than beer, wine (derived from grapes) or sparkling wine (derived from grapes), by increasing the alcohol content by distillation.

Apparatus specifically adapted therefor.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Processes specially adapted for distillation or rectification of fermented solutions	B01D 3/001

C12H 6/04

by freezing

Definition statement

This place covers:

Methods for preparing alcoholic beverages other than beer, wine (derived from grapes) or sparkling wine (derived from grapes), by increasing the alcohol content by refrigeration and separation of the crystals thus formed (i.e. freeze-concentration);

Apparatus specifically adapted therefor.