CPC COOPERATIVE PATENT CLASSIFICATION

C02F TREATMENT OF WATER, WASTE WATER, SEWAGE, OR SLUDGE (separation in general B01D; special arrangements on waterborne vessels of installations for treating water, waste water or sewage, e.g. for producing fresh water, B63J; adding materials to water to prevent corrosion C23F; treating radioactively-contaminated liquids G21F 9/04 ; regeneration of reactants for recirculation into processes, see the relevant places for the processes)

NOTE

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.

WARNING

The following IPC groups are not used in the CPC system. Subject matter covered by these groups is classified in the following CPC groups:
C02F 9/02 to C02F 9/14 covered by C02F 9/00 and subgroup

C02F 1/00 **Treatment of water, waste water, or sewage** (C02F 3/00 to C02F 9/00 take precedence)

C02F 1/001 . { Processes for the treatment of water whereby the filtration technique is of importance (C02F 1/44 takes precedence; construction of filters in general B01D 24/00 to B01D 41/00)}

C02F 1/002 . . { using small portable filters for producing potable water, e.g. personal travel or emergency equipment, survival kits, combat gear (C02F 1/003 takes precedence)}

C02F 1/003 . . { using household-type filters for producing potable water, e.g. pitchers, bottles, faucet mounted devices (C02F 9/005 takes precedence)}

C02F 1/004 . . { using large scale industrial sized filters }

C02F 1/005 . { Systems or processes based on supernatural or anthroposophic principles, cosmic or terrestrial radiation, geomancy or rhabdomancy }

C02F 1/006 . { Water distributors either inside a treatment tank or directing the water to several treatment tanks; Water treatment plants incorporating these distributors, with or without chemical or biological tanks (for settling tanks B01D 21/24)}

C02F 1/008 . { Control or steering systems not provided for elsewhere in subclass C02F }

C02F 1/02 . by heating (methods of steam generation F22B ; preheating boiler feed-water or accumulating preheated boiler feed-water F22D)

C02F 1/025 . . { Thermal hydrolysis }

C02F 1/04 . . by distillation or evaporation

C02F 1/041 . . . { by means of vapour compression }

C02F 1/042 . . . { Prevention of deposits }

C02F 1/043 . . . { Details }

C02F 1/045 . . . { for obtaining ultra-pure water }
C02F 1/046 . . . { under vacuum produced by a barometric column }
C02F 1/047 . . . { using eolic energy }
C02F 1/048 . . . { Purification of waste water by evaporation }
C02F 1/06 . . . Flash evaporation
C02F 1/08 . . . Thin film evaporation
C02F 1/10 . . . by direct contact with a particulate solid or with a fluid, as a heat transfer medium
C02F 1/12 . . . . Spray evaporation
C02F 1/14 . . . using solar energy
C02F 1/16 . . . using waste heat from other processes
C02F 1/18 . . . Transportable devices to obtain potable water

C02F 1/20 . by degassing, i.e. liberation of dissolved gases (degasification of liquids in general B01D 19/00 ; arrangement of degassing apparatus in boiler feed supply F22D)

C02F 1/22 . by freezing

C02F 1/24 . by flotation (C02F 1/465 takes precedence)

C02F 1/26 . by extraction
C02F 1/265 . . { Desalination }

C02F 1/28 . by sorption (using ion-exchange C02F 1/42 ; sorbent compositions B01J)
C02F 1/281 . . { using inorganic sorbents }
C02F 1/283 . . { using coal, charred products, or inorganic mixtures containing them }
C02F 1/285 . . { using synthetic organic sorbents }
C02F 1/286 . . { using natural organic sorbents or derivatives thereof }
C02F 1/288 . . { using composite sorbents, e.g. coated, impregnated, multi-layered }

C02F 1/30 . by irradiation
C02F 1/302 . . { with microwaves }
C02F 1/305 . . { with electrons }
C02F 1/307 . . { with X-rays or gamma radiation }

WARNING

Not complete pending the completion of a reclassification, see also C02F 1/30

C02F 1/32 . . with ultra-violet light
C02F 1/325 . . . { Irradiation devices or lamp constructions }

C02F 1/34 . with mechanical oscillations
C02F 1/36 . . ultrasonic vibrations

C02F 1/38 . by centrifugal separation

C02F 1/385 . . { by centrifuging suspensions (centrifuges B04B)}

C02F 1/40 . Devices for separating or removing fatty or oily substances or similar floating material (cleaning or keeping clear the surface of open water from oil or like materials E02B 15/04 ; devices in sewers for separating liquid or solid substances from sewage E03F 5/14 , e.g. for use in drains leading to the sewer E03F 5/16)

C02F 1/42 . by ion-exchange (ion-exchange in general B01J)

NOTE

When classifying in group C02F 1/42 , details of ion-exchangers can be further indexed by using indexing codes chosen from C02F 2001/422 to C02F 2001/427

C02F 1/44 . by dialysis, osmosis or reverse osmosis {(general membrane separation processes B01D 61/00 , membrane modules B01D 63/00 , electrodialysis C02F 1/4693 , combination of membrane modules and bioreactors C02F 3/1268)}

C02F 1/441 . . { by reverse osmosis }

C02F 1/442 . . { by nanofiltration }

C02F 1/444 . . { by ultrafiltration or microfiltration }

C02F 1/445 . . { by forward osmosis }

C02F 1/447 . . { by membrane distillation (distillation and evaporation without the use of membranes C02F 1/04)}

C02F 1/448 . . { by pervaporation }

C02F 1/46 . by electrochemical methods

C02F 1/4602 . . { for prevention or elimination of deposits }

C02F 1/4604 . . { for desalination of seawater or brackish water }

C02F 1/4606 . . { for producing oligodynamic substances to desinfect the water }

C02F 1/4608 . . { using electrical discharges }

C02F 1/461 . . by electrolysis

C02F 1/46104 . . . { Devices therefor; Their operating or servicing }

C02F 1/46109 . . . . { Electrodes }

NOTE

When classifying in group C02F 1/46109 , details of devices for electrolysis can be further indexed by using indexing codes chosen from C02F 2001/46119 to C02F 2001/46166]

C02F 1/46114 . . . . . { Electrodes in particulate form or with conductive and/or non conductive particules between them }

C02F 1/46176 . . . . { Galvanic cells }

C02F 1/4618 . . . . { for producing "ionised" acidic or basic water }

NOTE

When classifying in group C02F 1/4618 , details relating to the production of "ionised" acidic or basic water using electrolysis devices can be further indexed by using indexing codes chosen from

2001/46185 to C02F 2001/46195

C02F 1/463 . . . by electrocoagulation

C02F 1/465 . . . by electroflotation

C02F 1/467 . . . by electrochemical desinfection; { by electrooxydation or by electroreduction }

C02F 1/4672 . . . . { by electrooxydation }

C02F 1/4674 . . . . . { with halogen or compound of halogens, e.g. chlorine, bromine }

C02F 1/4676 . . . . { by electroreduction }

C02F 1/4678 . . . . . { of metals }

C02F 1/469 . . by electrochemical separation, e.g. by electro-osmosis, electrodialysis, electrophoresis

C02F 1/4691 . . . { Capacitive deionisation }

C02F 1/4693 . . . { electrodialysis }

C02F 1/4695 . . . . { electrodeionisation }

C02F 1/4696 . . . { electrophoresis }

C02F 1/4698 . . . { electro-osmosis }

C02F 1/48 . with magnetic or electric fields (C02F 1/46 takes precedence)

C02F 1/481 . . { using permanent magnets }

C02F 1/482 . . . { located on the outer wall of the treatment device, i.e. not in contact with the liquid to be treated, e.g. detachable }

C02F 1/484 . . { using electromagnets }

WARNING

Not complete pending the completion of a reclassification, see also C02F 1/48 and C02F 1/48 C

C02F 1/485 . . . { located on the outer wall of the treatment device, i.e. not in contact with the liquid to be treated, e.g. detachable }

WARNING

Not complete pending the completion of a reclassification, see also C02F 1/48

C02F 1/487 . . { using high frequency electromagnetic fields, e.g. pulsed electromagnetic fields }

WARNING

Not complete pending the completion of a reclassification, see also C02F 1/48

C02F 1/488 . . { for separation of magnetic materials, e.g. magnetic flocculation }

C02F 1/50 . by addition or application of a germicide or by oligodynamic treatment ({ C02F 1/46 H, C02F 1/467 , C02F 1/76 take precedence })

C02F 1/505 . . { by oligodynamic treatment }

C02F 1/52 . by flocculation or precipitation of suspended impurities {(C02F 1/463 takes

precedence)}

C02F 1/5209 .. { Regulation methods for flocculation or precipitation }

C02F 1/5227 .. { Processes for facilitating the dissolution of solid flocculants in water }

C02F 1/5236 .. { using inorganic agents }

C02F 1/5245 ... { using basic salts, e.g. of aluminium and iron }

C02F 1/5254 ... { using magnesium compounds and phosphoric acid for removing ammonia }

C02F 1/5263 .. { using natural chemical compounds }

C02F 1/5272 .. { using specific organic precipitants }

C02F 1/5281 .. { Installations for water purification using chemical agents }

C02F 1/529 .. { Processes or devices for preparing lime water }

C02F 1/54 .. using organic material

C02F 1/542 ... { Phosphorus compounds }

C02F 1/545 ... { Silicon compounds }

C02F 1/547 ... { Tensides }

C02F 1/56 ... Macromolecular compounds

C02F 1/58 . by removing specified dissolved compounds (using ion-exchange C02F 1/42 ; softening water C02F 5/00)

C02F 1/583 .. { by removing fluoride or fluorine compounds }

C02F 1/586 .. { by removing ammoniacal nitrogen (for biological methods C02F 3/00)}

C02F 1/60 .. Silicon compounds {(C02F 1/583 takes precedence)}

C02F 1/62 .. Heavy metal compounds

C02F 1/64 ... of iron or manganese

C02F 1/645 .... { Devices for iron precipitation and treatment by air }

C02F 1/66 . by neutralisation; pH adjustment (for degassing C02F 1/20 ; using ion-exchange C02F 1/42 ; for flocculation or precipitation of suspended impurities C02F 1/52 ; for removing dissolved compounds C02F 1/58)

C02F 1/68 . by addition of specified substances, e.g. trace elements, for ameliorating potable water (medicinal water A61K)

C02F 1/681 .. { by addition of solid materials for removing an oily layer on water }

C02F 1/682 .. { by addition of chemical compounds for dispersing an oily layer on water }

C02F 1/683 .. { by addition of complex-forming compounds }

C02F 1/685 .. { Devices for dosing the additives }

C02F 1/686 ... { Devices for dosing liquid additives }

C02F 1/687 ... { Devices for dosing solid compounds }

C02F 1/688 ... { Devices in which the water progressively dissolves a solid compound }

C02F 1/70 . by reduction {(C02F 1/4676 takes precedence)}

C02F 1/705 .. { Reduction by metals }

C02F 1/72 . by oxidation {(C02F 1/4672 takes precedence)}

C02F 1/722 .. { Oxidation by peroxides }

C02F 1/725 .. { by catalytic oxidation }

C02F 1/727 . . { using pure oxygen or oxygen rich gas }
C02F 1/74 . . with air (aeration of stretches of water C02F 7/00)
C02F 1/76 . . with halogens or compounds of halogens {(C02F 1/4674 takes precedence)}
C02F 1/763 . . . { Devices for the addition of such compounds in gaseous form }
C02F 1/766 . . . { by means of halogens other than chlorine or of halogenated compounds containing halogen other than chlorine }
C02F 1/78 . . with ozone {(C02F 1/4672 takes precedence)}

C02F 3/00 **Biological treatment of water, waste water, or sewage** {(C02F 1/006 takes precedence)}

C02F 3/005 . { Combined electrochemical biological processes (aeration by electrolytically produced oxygen bubbles C02F 3/202)}

C02F 3/006 . { Regulation methods for biological treatment }

C02F 3/02 . Aerobic processes
C02F 3/025 . . { Biological purification using sources of oxygen other than air, oxygen or ozone }
C02F 3/04 . . using trickle filters
C02F 3/043 . . . { Devices for distributing water over trickle filters }
C02F 3/046 . . . { Soil filtration }
C02F 3/06 . . using submerged filters
C02F 3/08 . . using moving contact bodies
C02F 3/082 . . . { Rotating biological contactors }
C02F 3/085 . . . { Fluidized beds }
C02F 3/087 . . . . { Floating beds with contact bodies having a lower density than water }
C02F 3/10 . . Packings; Fillings; Grids (packing elements in general B01J 19/30 , B01J 19/32)
C02F 3/101 . . . { Arranged-type packing, e.g. stacks, arrays }
C02F 3/102 . . . { Permeable membranes }
C02F 3/103 . . . { Textile-type packing }
C02F 3/104 . . . { Granular carriers }
C02F 3/105 . . . { Characterized by the chemical composition }
C02F 3/106 . . . . { Carbonaceous materials }
C02F 3/107 . . . . { Inorganic materials, e.g. sand, silicates }
C02F 3/108 . . . . { Immobilising gels, polymers or the like }
C02F 3/109 . . . { Characterized by the shape (C02F 3/104 takes precedence)}
C02F 3/12 . . Activated sludge processes
C02F 3/1205 . . . { Particular type of activated sludge processes }
C02F 3/121 . . . . { Multistep treatment }
C02F 3/1215 . . . . { Combinations of activated sludge treatment with precipitation, flocculation, coagulation and separation of phosphates }
C02F 3/1221 . . . . { comprising treatment of the recirculated sludge }
C02F 3/1226 . . . . { comprising an absorbent material suspended in the mixed liquor }
C02F 3/1231 . . . . { Treatments of toxic sewage }

C02F 3/1236 ... { Particular type of activated sludge installations }
C02F 3/1242 .... { Small compact installations for use in homes, apartment blocks, hotels or the like }
C02F 3/1247 ..... { comprising circular tanks with elements, e.g. decanters, aeration basins, in the form of segments, crowns or sectors }
C02F 3/1252 .... { Cylindrical tanks with horizontal axis }
C02F 3/1257 .... { Oxidation ditches }
C02F 3/1263 .... { Sequencing batch reactors (SBR) }
C02F 3/1268 .... { Membrane bioreactor systems }
C02F 3/1273 ..... { Submerged membrane bioreactors }
C02F 3/1278 ... { Provisions for mixing or aeration of the mixed liquor }
C02F 3/1284 .... { Mixing devices }
C02F 3/1289 .... { Aeration by saturation under super-atmospheric pressure }
C02F 3/1294 .... { "Venturi" aeration means }
C02F 3/14 ... using surface aeration
C02F 3/145 .... { Protection against aerosols }
C02F 3/16 .... the aerator having a vertical axis
C02F 3/165 ..... { using vertical aeration channels }
C02F 3/18 .... the aerator having a horizontal axis
C02F 3/20 ... using diffusers
C02F 3/201 .... { Perforated, resilient plastic diffusers, e.g. membranes, sheets, foils, tubes, hoses }
C02F 3/202 .... { Aeration by electrolytically produced oxygen bubbles }
C02F 3/203 .... { Swing diffusers }
C02F 3/205 .... { Moving, e.g. rotary, diffusers; Stationary diffusers with moving, e.g. rotary, distributors }
C02F 3/206 ..... { with helical screw impellers }
C02F 3/207 ..... { with axial thrust propellers }
C02F 3/208 .... { Membrane aeration (C02F 3/201 takes precedence)}
C02F 3/22 ... using circulation pipes
C02F 3/223 .... { using "air-lift" }
C02F 3/226 .... { "Deep shaft" processes }
C02F 3/24 ... using free-fall aeration or spraying
C02F 3/26 ... using pure oxygen or oxygen-rich gas

C02F 3/28 . Anaerobic digestion processes
C02F 3/2806 .. { Anaerobic processes using solid supports for micro-organisms }
C02F 3/2813 .. { using anaerobic contact processes }
C02F 3/282 .. { using anaerobic sequencing batch reactors }
C02F 3/2826 .. { using anaerobic filters }
C02F 3/2833 .. { using fluidized bed reactors }
C02F 3/284 .. { using anaerobic baffled reactors }
C02F 3/2846 .. { using upflow anaerobic sludge blanket (UASB) reactors }
C02F 3/2853 .. { using anaerobic membrane bioreactors }

C02F 3/286 .. { including two or more steps }
C02F 3/2866 .. { Particular arrangements for anaerobic reactors }
C02F 3/2873 ... { with internal draft tube circulation }
C02F 3/288 ... { comprising septic tanks combined with a filter }
C02F 3/2886 ... { Two story combinations of the Imhoff tank type }
C02F 3/2893 ... { with biogas recycling }

C02F 3/30 . Aerobic and anaerobic processes
C02F 3/301 .. { Aerobic and anaerobic treatment in the same reactor }
C02F 3/302 .. { Nitrification and denitrification treatment (C02F 3/308 takes precedence)}
C02F 3/303 ... { characterised by the nitrification }
C02F 3/305 ... { characterised by the denitrification }
C02F 3/306 .... { Denitrification of water in soil }
C02F 3/307 ... { characterised by direct conversion of nitrite to molecular nitrogen, e.g. by using the Anammox process }
C02F 3/308 .. { Biological phosphorus removal }

C02F 3/32 . characterised by the animals or plants used, e.g. algae
C02F 3/322 .. { use of algae }
C02F 3/325 ... { as symbiotic combination of algae and bacteria }
C02F 3/327 .. { characterised by animals and plants }

C02F 3/34 . characterised by the micro-organisms used
C02F 3/341 .. { Consortia of bacteria }
C02F 3/342 .. { characterised by the enzymes used }
C02F 3/343 .. { for digestion of grease, fat, oil }
C02F 3/344 .. { for digestion of mineral oil }
C02F 3/345 .. { for biological oxidation or reduction of sulfur compounds }
C02F 3/346 .. { Iron bacteria }
C02F 3/347 .. { Use of yeasts or fungi (C02F 3/322 takes precedence)}
C02F 3/348 .. { characterised by the way or the form in which the microorganisms are added or dosed }

C02F 5/00 **Softening water; Preventing scale; Adding scale preventatives or scale removers to water, e.g. adding sequestering agents** (softening using ion-exchange C02F 1/42)

C02F 5/02 . Softening water by precipitation of the hardness
C02F 5/025 .. { Hot-water softening devices }
C02F 5/04 .. using phosphates (C02F 5/06 takes precedence)
C02F 5/06 .. using calcium compounds

C02F 5/08 . Treatment of water with complexing chemicals or other solubilising agents for softening, scale prevention or scale removal, e.g. adding sequestering agents
C02F 5/083 .. { Mineral agents }
C02F 5/086 .. { Condensed phosphates }

C02F 5/10 .. using organic substances
C02F 5/105 ... { combined with inorganic substances }
C02F 5/12 ... containing nitrogen (C02F 5/14 takes precedence)
C02F 5/125 .... { combined with inorganic substances }
C02F 5/14 ... containing phosphorus
C02F 5/145 .... { combined with inorganic substances }

C02F 7/00 Aeration of stretches of water

C02F 9/00 Multistage treatment of water, waste water, or sewage

NOTE

This group covers only those combined treating operations where the interest is directed to the relationship between the steps.

This group does not cover, for example, chemical treatment followed by settlement or biological treatment involving normal mechanical treatment.

C02F 9/005 . { Portable or detachable small-scale multistage treatment devices, e.g. point of use or laboratory water purification systems (single-stage processes in combination with filtration techniques C02F 1/002 or C02F 1/003)}

C02F 11/00 Treatment of sludge; Devices therefor

C02F 11/002 . { Sludge treatment using liquids immiscible with water }
C02F 11/004 . { Sludge detoxification }
C02F 11/006 . { Electrochemical treatment, e.g. electro-oxidation or electro-osmosis }
C02F 11/008 . { Sludge treatment by fixation or solidification }
C02F 11/02 . Biological treatment
C02F 11/04 .. Anaerobic treatment; Production of methane by such processes
C02F 11/06 . by oxidation (incinerators for burning waste liquors, e.g. sulfite liquor from paper-making plant F23G 7/04)
C02F 11/08 .. Wet air oxidation
C02F 11/083 ... { using deep well reactors }
C02F 11/086 ... { in the supercritical state }
C02F 11/10 . by pyrolysis
C02F 11/12 . by de-watering, drying, or thickening
C02F 11/121 .. { Processes for mechanical dehydration of sludge, e.g. by filters }
C02F 11/122 ... using press filters (C02F 11/123 takes precedence)

C02F 11/123 . . . using belt or band filters
C02F 11/125 . . . using screw filters
C02F 11/126 . . . using drum filters
C02F 11/127 . . . by centrifugation
C02F 11/128 . . . Batch processes
C02F 11/14 . . with addition of chemical agents
C02F 11/16 . . using drying or composting beds

C02F 11/18 . by thermal conditioning (by pyrolysis C02F 11/10)
C02F 11/185 . . { by pasteurisation }
C02F 11/20 . . by freezing

C02F 2001/00 **Treatment of water, waste water, or sewage** (C02F 3/00 to C02F 9/00 take precedence)

C02F 2001/007 . Processes including a sedimentation step

C02F 2001/42 . by ion-exchange (ion-exchange in general B01J)

NOTE

When classifying in group C02F 1/42 , details of ion-exchangers can be further indexed by using indexing codes chosen from C02F 2001/422 to C02F 2001/427

C02F 2001/422 . . using anionic exchangers
C02F 2001/425 . . using cation exchangers
C02F 2001/427 . . using mixed beds

C02F 2001/46 . by electrochemical methods
C02F 2001/461 . . by electrolysis
C02F 2001/46104 . . . { Devices therefor; Their operating or servicing }
C02F 2001/46109 . . . . { Electrodes }

NOTE

When classifying in group C02F 1/46109 , details of devices for electrolysis can be further indexed by using indexing codes chosen from C02F 2001/46119 to C02F 2001/46166]

C02F 2001/46119 . . . . . Cleaning the electrodes
C02F 2001/46123 . . . . . Movable electrodes
C02F 2001/46128 . . . . . Bipolar electrodes
C02F 2001/46133 . . . . . characterised by the material
C02F 2001/46138 . . . . . Electrodes comprising a substrate and a coating
C02F 2001/46142 . . . . . Catalytic coating
C02F 2001/46147 . . . . . Diamond coating
C02F 2001/46152 . . . . . characterised by the shape or form (electrodes in particulate form or with conductive or non-conductive particles between them C02F 1/46114

)

C02F 2001/46157 . . . . . Perforated or foraminous electrodes

C02F 2001/46161 . . . . . Porous electrodes

C02F 2001/46166 . . . . . Gas diffusion electrodes

C02F 2001/46171 . . . . . Cylindrical or tubular shaped

C02F 2001/4618 . . . . { for producing "ionised" acidic or basic water }

NOTE

When classifying in group C02F 1/4618 , details relating to the production of "ionised" acidic or basic water using electrolysis devices can be further indexed by using indexing codes chosen from C02F 2001/46185 to C02F 2001/46195

C02F 2001/46185 . . . . . only anodic or acidic water, e.g. for oxidizing or sterilizing

C02F 2001/4619 . . . . . only cathodic or alkaline water, e.g. for reducing

C02F 2001/46195 . . . . . characterised by the oxidation reduction potential (ORP)

C02F 2001/52 . by flocculation or precipitation of suspended impurities {(C02F 1/463 takes precedence)}

C02F 2001/5218 . . Crystallization

C02F 2003/00 **Biological treatment of water, waste water, or sewage** {(C02F 1/006 takes precedence)}

C02F 2003/001 . using granular carriers or supports for the microorganisms

C02F 2003/003 . . using activated carbon or the like

C02F 2003/008 . using anaerobic baffled reactors

C02F 2101/00 **Nature of the contaminant**

C02F 2101/003 . Explosive compounds, e.g. TNT

C02F 2101/006 . Radioactive compounds

C02F 2101/10 . Inorganic compounds

C02F 2101/101 . . Sulfur compounds

C02F 2101/103 . . Arsenic compounds

C02F 2101/105 . . Phosphorus compounds

C02F 2101/106 . . Selenium compounds

C02F 2101/108 . . Boron compounds

C02F 2101/12 . . Halogens or halogen-containing compounds

C02F 2101/14 . . . Fluorine or fluorine-containing compounds

C02F 2101/16 . . Nitrogen compounds, e.g. ammonia

C02F 2101/163 . . . Nitrates

C02F 2101/166 . . . Nitrites

C02F 2101/18 . . . Cyanides
C02F 2101/20 . . Heavy metals or heavy metal compounds
C02F 2101/203 . . . Iron or iron compound
C02F 2101/206 . . . Manganese or manganese compounds
C02F 2101/22 . . . Chromium or chromium compounds, e.g. chromates

C02F 2101/30 . Organic compounds
C02F 2101/301 . . Detergents, surfactants
C02F 2101/303 . . Complexing agents
C02F 2101/305 . . Endocrine disruptive agents
C02F 2101/306 . . Pesticides
C02F 2101/308 . . Dyes; Colorants; Fluorescent agents
C02F 2101/32 . . Hydrocarbons, e.g. oil
C02F 2101/322 . . . Volatile compounds, e.g. benzene
C02F 2101/325 . . . Emulsions
C02F 2101/327 . . . Polyaromatic Hydrocarbons (PAH's)
C02F 2101/34 . . containing oxygen
C02F 2101/345 . . . Phenols
C02F 2101/36 . . containing halogen
C02F 2101/363 . . . PCB`s; PCP`s
C02F 2101/366 . . . Dioxine; Furan
C02F 2101/38 . . containing nitrogen
C02F 2101/40 . . containing sulfur

C02F 2103/00 Nature of the water, waste water, sewage or sludge to be treated

C02F 2103/001 . Runoff or storm water

C02F 2103/002 . Grey water, e.g. from clothes washers, showers or dishwashers

C02F 2103/003 . Wastewater from hospitals, laboratories and the like, heavily contaminated by pathogenic microorganisms

C02F 2103/005 . Black water originating from toilets

C02F 2103/006 . Dental effluents

C02F 2103/007 . Contaminated open waterways, rivers, lakes or ponds

C02F 2103/008 . Originating from marine vessels, ships and boats, e.g. bilge water or ballast water

C02F 2103/02 . Non-contaminated water, e.g. for industrial water supply
C02F 2103/023 . . Water in cooling circuits
C02F 2103/026 . . Treating water for medical or cosmetic purposes
C02F 2103/04 . . For obtaining ultra-pure water

C02F 2103/06 . Contaminated groundwater or leachate

C02F 2103/08 . Seawater, e.g. for desalination

C02F 2103/10 . from quarries or from mining activities

C02F 2103/12 . from the silicate or ceramic industries, e.g. waste waters from cement or glass factories

C02F 2103/14 . Paint wastes

C02F 2103/16 . from metallurgical processes, i.e. from the production, refining or treatment of metals, e.g. galvanic wastes

C02F 2103/18 . from the purification of gaseous effluents

C02F 2103/20 . from animal husbandry

C02F 2103/22 . from the processing of animals, e.g. poultry, fish, or parts thereof

C02F 2103/24 . . from tanneries

C02F 2103/26 . from the processing of plants or parts thereof

C02F 2103/28 . . from the paper or cellulose industry

C02F 2103/30 . from the textile industry

C02F 2103/32 . from the food or foodstuff industry, e.g. brewery waste waters

C02F 2103/322 . . from vegetable oil production, e.g. olive oil production

C02F 2103/325 . . from processes relating to the production of wine products

C02F 2103/327 . . from processes relating to the production of dairy products

C02F 2103/34 . from industrial activities not provided for in groups C02F 2103/12 to C02F 2103/32

C02F 2103/343 . . from the pharmaceutical industry, e.g. containing antibiotics

C02F 2103/346 . . from semiconductor processing, e.g. waste water from polishing of wafers

C02F 2103/36 . . from the manufacture of organic compounds

C02F 2103/365 . . . from petrochemical industry (e.g. refineries)

C02F 2103/38 . . . Polymers

C02F 2103/40 . . from the manufacture or use of photosensitive materials

C02F 2103/42 . from bathing facilities, e.g. swimming pools

C02F 2103/44 . from vehicle washing facilities

C02F 2201/00 Apparatus for treatment of water, waste water or sewage

C02F 2201/001 . Build in apparatus for autonomous on board water supply and wastewater treatment (e.g. for aircrafts, cruiseships, oil drilling platforms, railway trains, space stations)

C02F 2201/002 . Construction details of the apparatus

C02F 2201/003 . . Coaxial constructions, e.g. a cartridge located coaxially within another

C02F 2201/004 .. Seals, connections
C02F 2201/005 .. Valves
C02F 2201/006 .. Cartridges
C02F 2201/007 .. Modular design

C02F 2201/008 . Mobile apparatus and plants, e.g. mounted on a vehicle (for biological treatment C02F 2203/008)

C02F 2201/009 . Apparatus with independent power supply, e.g. solar cells, windpower, fuel cells (for electrolysis apparatus C02F 2201/46165)

C02F 2201/32 . Details relating to UV-irradiation devices
C02F 2201/322 .. Lamp arrangement
C02F 2201/3221 ... Lamps suspended above a water surface or pipe
C02F 2201/3222 ... Units using UV-light emitting diodes (LED)
C02F 2201/3223 ... Single elongated lamp located on the central axis of a turbular reactor
C02F 2201/3224 ... Units using UV-light guiding optical fibers
C02F 2201/3225 ... Lamps immersed in an open channel, containing the liquid to be treated
C02F 2201/3226 ... Units using UV-light emitting lasers
C02F 2201/3227 ... Units with two or more lamps
C02F 2201/3228 ... Units having reflectors, e.g. coatings, baffles, plates, mirrors
C02F 2201/324 .. Lamp cleaning installations, e.g. brushes
C02F 2201/326 .. Lamp control systems
C02F 2201/328 .. Having flow diverters (baffles)

C02F 2201/46 . Apparatus for electrochemical processes
C02F 2201/461 .. Electrolysis apparatus
C02F 2201/46105 ... Details relating to the electrolytic devices
C02F 2201/4611 .... Fluid flow
C02F 2201/46115 .... Electrolytic cell with membranes or diaphragms
C02F 2201/4612 .... Controlling or monitoring
C02F 2201/46125 ..... Electrical variables
C02F 2201/4613 ..... Inversing polarity
C02F 2201/46135 ..... Voltage
C02F 2201/4614 ..... Current
C02F 2201/46145 ..... Fluid flow
C02F 2201/4615 ..... Time
C02F 2201/46155 .... Heating or cooling
C02F 2201/4616 .... Power supply
C02F 2201/46165 ..... Special power supply, e.g. solar energy or batteries
C02F 2201/4617 ..... DC only
C02F 2201/46175 ..... Electrical pulses
C02F 2201/4618 .... Supplying or removing reactants or electrolyte
C02F 2201/46185 ..... Recycling the cathodic or anodic feed

C02F 2201/4619 . . . . Supplying gas to the electrolyte (gas diffusion electrodes C02F 2001/46166)

C02F 2201/46195 . . . . Cells containing solid electrolyte

C02F 2201/48 . Devices for applying magnetic or electric fields

C02F 2201/483 . . using coils

C02F 2201/486 . . using antenna

C02F 2201/78 . Details relating to ozone treatment devices

C02F 2201/782 . . Ozone generators

C02F 2201/784 . . Diffusers or nozzles for ozonation

C02F 2203/00 Apparatus and plants for the biological treatment of water, waste water or sewage

C02F 2203/002 . comprising an initial buffer container

C02F 2203/004 . comprising a selector reactor for promoting floc-forming or other bacteria

C02F 2203/006 . details of construction, e.g. specially adapted seals, modules, connections

C02F 2203/008 . Mobile apparatus and plants, e.g. mounted on a vehicle

C02F 2209/00 Controlling or monitoring parameters in water treatment

C02F 2209/001 . Upstream control, i.e. monitoring for predictive control

C02F 2209/003 . Downstream control, i.e. outlet monitoring, e.g. to check the treating agents, such as halogens or ozone, leaving the process

C02F 2209/005 . Processes using a programmable logic controller (PLC)

C02F 2209/006 . . comprising a software program or a logic diagram

C02F 2209/008 . . comprising telecommunication features, e.g. modems or antennas

C02F 2209/01 . Density

C02F 2209/02 . Temperature

C02F 2209/03 . Pressure

C02F 2209/04 . Oxidation reduction potential (ORP)

C02F 2209/05 . Conductivity or salinity

C02F 2209/055 . . Hardness

C02F 2209/06 . pH

C02F 2209/07 . Alkalinity

C02F 2209/08 . Chemical Oxygen Demand (COD); Biological Oxygen Demand (BOD)

C02F 2209/09 . Viscosity

C02F 2209/10 . Solids, e.g. total solids (TS), total suspended solids (TSS) or volatile solids (VS)
C02F 2209/105 . . Particle number, particle size or particle characterisation

C02F 2209/11 . Turbidity

C02F 2209/12 . Volatile Fatty Acids (VFAs)

C02F 2209/14 . NH3-N

C02F 2209/15 . N03-N

C02F 2209/16 . Total nitrogen (tkN-N)

C02F 2209/18 . PO4-P

C02F 2209/19 . SO4-S

C02F 2209/20 . Total organic carbon (TOC)

C02F 2209/21 . Dissolved organic carbon (DOC)

C02F 2209/22 . O2
C02F 2209/225 . . in the gas phase

C02F 2209/23 . O3
C02F 2209/235 . . in the gas phase

C02F 2209/24 . CO2
C02F 2209/245 . . in the gas phase

C02F 2209/26 . H2S
C02F 2209/265 . . in the gas phase

C02F 2209/28 . CH4
C02F 2209/285 . . CH4 in the gas phase

C02F 2209/29 . Chlorine compounds

C02F 2209/30 . H2

C02F 2209/32 . CO

C02F 2209/34 . N2O

C02F 2209/36 . Biological material, e.g. enzymes or ATP

C02F 2209/38 . Gas flow rate

C02F 2209/40 . Liquid flow rate

C02F 2209/42 . Liquid level

C02F 2209/44 . Time
C02F 2209/445 . . Filter life

C02F 2301/00 General aspects of water treatment

C02F 2301/02 . Fluid flow conditions
C02F 2301/022 . . Laminar
C02F 2301/024 . . Turbulent
C02F 2301/026 . . Spiral, helicoidal, radial
C02F 2301/028 . . Tortuous

C02F 2301/04 . Flow arrangements
C02F 2301/043 . . Treatment of partial or bypass streams
C02F 2301/046 . . Recirculation with an external loop

C02F 2301/06 . Pressure conditions
C02F 2301/063 . . Underpressure, vacuum
C02F 2301/066 . . Overpressure, high pressure

C02F 2301/08 . Multistage treatments, e.g. repetition of the same process step under different conditions

C02F 2301/10 . Temperature conditions for biological treatment
C02F 2301/103 . . Psychrophilic treatment
C02F 2301/106 . . Thermophilic treatment

C02F 2303/00 Specific treatment goals

C02F 2303/02 . Odour removal or prevention of malodour

C02F 2303/04 . Disinfection

C02F 2303/06 . Sludge reduction, e.g. by lysis

C02F 2303/08 . Corrosion inhibition

C02F 2303/10 . Energy recovery

C02F 2303/12 . Prevention of foaming

C02F 2303/14 . Maintenance of water treatment installations

C02F 2303/16 . Regeneration of sorbents, filters

C02F 2303/18 . Removal of treatment agents after treatment

C02F 2303/185 . . The treatment agent being halogen or a halogenated compound

C02F 2303/20 . Prevention of biofouling

C02F 2303/22 . Eliminating or preventing deposits, scale removal, scale prevention (C02F 1/042 , C02F 1/4602 , C02F 5/00 take precedence)

C02F 2303/24 . Separation of coarse particles, e.g. by using sieves or screens

C02F 2303/26 . Reducing the size of particles, liquid droplets or bubbles, e.g. by crushing, grinding, spraying, creation of micro-bubbles or nano-bubbles

C02F 2305/00 Use of specific compounds during water treatment

C02F 2305/02 . Specific form of oxidant

C02F 2305/023 . . Reactive oxygen species, singlet oxygen, OH radical

C02F 2305/026 . . Fenton's reagent

C02F 2305/04 . Surfactants, used as part of a formulation or alone

C02F 2305/06 . Nutrients for stimulating the growth of microorganisms

C02F 2305/08 . Nanoparticles or nanotubes

C02F 2305/10 . Photocatalysts

C02F 2305/12 . Inert solids used as ballast for improving sedimentation (C02F 3/1226 takes precedence)

C02F 2305/14 . Additives which dissolves or releases substances when predefined environmental conditions are reached, e.g. pH or temperature

C02F 2307/00 Location of water treatment or water treatment device

C02F 2307/02 . as part of a bottle

C02F 2307/04 . as part of a pitcher or jug

C02F 2307/06 . Mounted on or being part of a faucet, shower handle or showerhead

C02F 2307/08 . Treatment of wastewater in the sewer, e.g. to reduce grease, odour

C02F 2307/10 . as part of a potable water dispenser, e.g. for use in homes or offices

C02F 2307/12 . as part of household appliances such as dishwashers, laundry washing machines or vacuum cleaners

C02F 2307/14 . Treatment of water in water supply networks, e.g. to prevent bacterial growth