

CPC COOPERATIVE PATENT CLASSIFICATION

C CHEMISTRY; METALLURGY

(NOTES omitted)

CHEMISTRY

C02 TREATMENT OF WATER, WASTE WATER, SEWAGE, OR SLUDGE

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

{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	Treatment of water, waste water, or sewage (C02F 3/00 - C02F 9/00 take precedence)	1/047	. . . {using eolic energy}
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 - B01D 41/00)}	1/048	. . . {Purification of waste water by evaporation}
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)}	1/06	. . . Flash evaporation
1/003	. . {using household-type filters for producing potable water, e.g. pitchers, bottles, faucet mounted devices (C02F 9/20 takes precedence)}	1/08	. . . Thin film evaporation
1/004	. . {using large scale industrial sized filters}	1/10	. . . by direct contact with a particulate solid or with a fluid, as a heat transfer medium
1/005	. {Systems or processes based on supernatural or anthroposophic principles, cosmic or terrestrial radiation, geomancy or rhabdomancy}	1/12 Spray evaporation
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)}	1/14	. . . using solar energy
2001/007	. {Processes including a sedimentation step}	1/16	. . . using waste heat from other processes
1/008	. {Control or steering systems not provided for elsewhere in subclass C02F }	1/18	. . . Transportable devices to obtain potable water
1/02	. by heating (methods of steam generation F22B ; preheating boiler feed-water or accumulating preheated boiler feed-water F22D)	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)
1/025	. . {Thermal hydrolysis}	1/22	. by freezing
1/04	. . by distillation or evaporation	1/24	. by flotation (C02F 1/465 takes precedence)
1/041	. . . {by means of vapour compression}	1/26	. by extraction
1/042	. . . {Prevention of deposits}	1/265	. . {Desalination}
1/043	. . . {Details}	1/28	. by sorption (using ion-exchange C02F 1/42 ; sorbent compositions B01J)
1/045	. . . {for obtaining ultra-pure water}	1/281	. . {using inorganic sorbents}
1/046	. . . {under vacuum produced by a barometric column}	1/283	. . {using coal, charred products, or inorganic mixtures containing them}
		1/285	. . {using synthetic organic sorbents}
		1/286	. . {using natural organic sorbents or derivatives thereof}
		1/288	. . {using composite sorbents, e.g. coated, impregnated, multi-layered}
		1/30	. by irradiation
		1/302	. . {with microwaves}
		1/305	. . {with electrons}
		1/307	. . {with X-rays or gamma radiation}
		1/32	. . with ultra-violet light
		1/325	. . . {Irradiation devices or lamp constructions}
		1/34	. with mechanical oscillations

- 1/36 . . ultrasonic vibrations
- 1/38 . by centrifugal separation
- 1/385 . . {by centrifuging suspensions (centrifuges B04B)}
- 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)
- 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](#) - [C02F 2001/427](#)

- 2001/422 . . {using anionic exchangers}
- 2001/425 . . {using cation exchangers}
- 2001/427 . . {using mixed beds}
- 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)}
- 1/441 . . {by reverse osmosis}
- 1/442 . . {by nanofiltration}
- 1/444 . . {by ultrafiltration or microfiltration}
- 1/445 . . {by forward osmosis}
- 1/447 . . {by membrane distillation (distillation and evaporation without the use of membranes C02F 1/04)}
- 1/448 . . {by pervaporation}
- 1/46 . by electrochemical methods
- 1/4602 . . {for prevention or elimination of deposits}
- 1/4604 . . {for desalination of seawater or brackish water}
- 1/4606 . . {for producing oligodynamic substances to disinfect the water}
- 1/4608 . . {using electrical discharges}
- 1/461 . . by electrolysis
- 1/46104 . . . {Devices therefor; Their operating or servicing}
- 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](#) - [C02F 2001/46166](#)

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

- 2001/46152 {characterised by the shape or form (electrodes in particulate form or with conductive or non-conductive particles between them C02F 1/46114)}
- 2001/46157 {Perforated or foraminous electrodes}
- 2001/46161 {Porous electrodes}
- 2001/46166 {Gas diffusion electrodes}
- 2001/46171 {Cylindrical or tubular shaped}
- 1/46176 {Galvanic cells}
- 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 [C02F 2001/46185](#) - [C02F 2001/46195](#)

- 2001/46185 {only anodic or acidic water, e.g. for oxidizing or sterilizing}
- 2001/4619 {only cathodic or alkaline water, e.g. for reducing}
- 2001/46195 {characterised by the oxidation reduction potential [ORP]}
- 1/463 . . . by electrocoagulation
- 1/465 . . . by electroflotation
- 1/467 . . . by electrochemical disinfection; {by electrooxydation or by electroreduction}
- 1/4672 {by electrooxydation}
- 1/4674 {with halogen or compound of halogens, e.g. chlorine, bromine}
- 1/4676 {by electroreduction}
- 1/4678 {of metals}
- 1/469 . . by electrochemical separation, e.g. by electro-osmosis, electrodialysis, electrophoresis
- 1/4691 . . . {Capacitive deionisation}
- 1/4693 . . . {electrodialysis}
- 1/4695 {electrodeionisation}
- 1/4696 . . . {electrophoresis}
- 1/4698 . . . {electro-osmosis}
- 1/48 . with magnetic or electric fields ([C02F 1/46](#) takes precedence)
- 1/481 . . {using permanent magnets}
- 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}
- 1/484 . . {using electromagnets}
- 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}
- 1/487 . . {using high frequency electromagnetic fields, e.g. pulsed electromagnetic fields}
- 1/488 . . {for separation of magnetic materials, e.g. magnetic flocculation}
- 1/50 . by addition or application of a germicide or by oligodynamic treatment {(C02F 1/4606, C02F 1/467, C02F 1/76 take precedence)}
- 1/505 . . {by oligodynamic treatment}
- 1/52 . by flocculation or precipitation of suspended impurities {(C02F 1/463 takes precedence)}

- 1/5209 . . {Regulation methods for flocculation or precipitation}
- 2001/5218 . . {Crystallization}
- 1/5227 . . {Processes for facilitating the dissolution of solid flocculants in water}
- 1/5236 . . {using inorganic agents}
- 1/5245 . . . {using basic salts, e.g. of aluminium and iron}
- 1/5254 . . . {using magnesium compounds and phosphoric acid for removing ammonia}
- 1/5263 . . {using natural chemical compounds}
- 1/5272 . . {using specific organic precipitants}
- 1/5281 . . {Installations for water purification using chemical agents}
- 1/529 . . {Processes or devices for preparing lime water}
- 1/54 . . using organic material
- 1/542 . . . {Phosphorus compounds}
- 1/545 . . . {Silicon compounds}
- 1/547 . . . {Tensides}
- 1/56 . . . Macromolecular compounds
- 1/58 . . by removing specified dissolved compounds (using ion-exchange [C02F 1/42](#); softening water [C02F 5/00](#))
- 1/583 . . {by removing fluoride or fluorine compounds}
- 1/586 . . {by removing ammoniacal nitrogen (for biological methods [C02F 3/00](#))}
- 1/60 . . Silicon compounds {([C02F 1/583](#) takes precedence)}
- 1/62 . . Heavy metal compounds
- 1/64 . . . of iron or manganese
- 1/645 {Devices for iron precipitation and treatment by air}
- 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](#))
- 1/68 . . by addition of specified substances, e.g. trace elements, for ameliorating potable water ([medicinal water A61K](#))
- 1/681 . . {by addition of solid materials for removing an oily layer on water}
- 1/682 . . {by addition of chemical compounds for dispersing an oily layer on water}
- 1/683 . . {by addition of complex-forming compounds}
- 1/685 . . {Devices for dosing the additives}
- 1/686 . . . {Devices for dosing liquid additives}
- 1/687 . . . {Devices for dosing solid compounds}
- 1/688 . . . {Devices in which the water progressively dissolves a solid compound}
- 1/70 . . by reduction {([C02F 1/4676](#) takes precedence)}
- 1/705 . . {Reduction by metals}
- 1/72 . . by oxidation {([C02F 1/4672](#) takes precedence)}
- 1/722 . . {Oxidation by peroxides}
- 1/725 . . {by catalytic oxidation}
- 1/727 . . {using pure oxygen or oxygen rich gas}
- 1/74 . . with air (aeration of stretches of water [C02F 7/00](#))
- 1/76 . . with halogens or compounds of halogens {([C02F 1/4674](#) takes precedence)}
- 1/763 . . . {Devices for the addition of such compounds in gaseous form}
- 1/766 . . . {by means of halogens other than chlorine or of halogenated compounds containing halogen other than chlorine}
- 1/78 . . with ozone {([C02F 1/4672](#) takes precedence)}
- 3/00 Biological treatment of water, waste water, or sewage {([C02F 1/006](#) takes precedence)}**
 - 2003/001 . . {using granular carriers or supports for the microorganisms}
 - 2003/003 . . {using activated carbon or the like}
 - 3/005 . . {Combined electrochemical biological processes (aeration by electrolytically produced oxygen bubbles [C02F 3/202](#))}
 - 3/006 . . {Regulation methods for biological treatment}
 - 2003/008 . . {using anaerobic baffled reactors}
 - 3/02 . . Aerobic processes
 - 3/025 . . {Biological purification using sources of oxygen other than air, oxygen or ozone}
 - 3/04 . . using trickle filters
 - 3/043 . . . {Devices for distributing water over trickle filters}
 - 3/046 . . . {Soil filtration}
 - 3/06 . . using submerged filters
 - 3/08 . . using moving contact bodies
 - 3/082 . . . {Rotating biological contactors}
 - 3/085 . . . {Fluidized beds}
 - 3/087 {Floating beds with contact bodies having a lower density than water}
 - 3/10 . . Packings; Fillings; Grids (packing elements in general [B01J 19/30](#), [B01J 19/32](#))
 - 3/101 . . . {Arranged-type packing, e.g. stacks, arrays}
 - 3/102 . . . {Permeable membranes}
 - 3/103 . . . {Textile-type packing}
 - 3/104 . . . {Granular carriers}
 - 3/105 . . . {Characterized by the chemical composition}
 - 3/106 {Carbonaceous materials}
 - 3/107 {Inorganic materials, e.g. sand, silicates}
 - 3/108 {Immobilising gels, polymers or the like}
 - 3/109 . . . {Characterized by the shape ([C02F 3/104](#) takes precedence)}
 - 3/12 . . Activated sludge processes
 - 3/1205 . . . {Particular type of activated sludge processes}
 - 3/121 {Multistep treatment}
 - 3/1215 {Combinations of activated sludge treatment with precipitation, flocculation, coagulation and separation of phosphates}
 - 3/1221 {comprising treatment of the recirculated sludge}
 - 3/1226 {comprising an absorbent material suspended in the mixed liquor}
 - 3/1231 {Treatments of toxic sewage}
 - 3/1236 . . . {Particular type of activated sludge installations}
 - 3/1242 {Small compact installations for use in homes, apartment blocks, hotels or the like}
 - 3/1247 {comprising circular tanks with elements, e.g. decanters, aeration basins, in the form of segments, crowns or sectors}
 - 3/1252 {Cylindrical tanks with horizontal axis}
 - 3/1257 {Oxidation ditches}
 - 3/1263 {Sequencing batch reactors [SBR]}
 - 3/1268 {Membrane bioreactor systems}
 - 3/1273 {Submerged membrane bioreactors}
 - 3/1278 . . . {Provisions for mixing or aeration of the mixed liquor}
 - 3/1284 {Mixing devices}

- 3/1289 {Aeration by saturation under super-atmospheric pressure}
- 3/1294 {"Venturi" aeration means}
- 3/14 . . . using surface aeration
- 3/145 {Protection against aerosols}
- 3/16 the aerator having a vertical axis
- 3/165 {using vertical aeration channels}
- 3/18 the aerator having a horizontal axis
- 3/20 . . . using diffusers
- 3/201 {Perforated, resilient plastic diffusers, e.g. membranes, sheets, foils, tubes, hoses}
- 3/202 {Aeration by electrolytically produced oxygen bubbles}
- 3/203 {Swing diffusers}
- 3/205 {Moving, e.g. rotary, diffusers; Stationary diffusers with moving, e.g. rotary, distributors}
- 3/206 {with helical screw impellers}
- 3/207 {with axial thrust propellers}
- 3/208 {Membrane aeration ([C02F 3/201 takes precedence](#))}
- 3/22 . . . using circulation pipes
- 3/223 {using "air-lift"}
- 3/226 {"Deep shaft" processes}
- 3/24 . . . using free-fall aeration or spraying
- 3/26 . . . using pure oxygen or oxygen-rich gas
- 3/28 . Anaerobic digestion processes
- 3/2806 . . {Anaerobic processes using solid supports for microorganisms}
- 3/2813 . . {using anaerobic contact processes}
- 3/282 . . {using anaerobic sequencing batch reactors}
- 3/2826 . . {using anaerobic filters}
- 3/2833 . . {using fluidized bed reactors}
- 3/284 . . {using anaerobic baffled reactors}
- 3/2846 . . {using upflow anaerobic sludge blanket [UASB] reactors}
- 3/2853 . . {using anaerobic membrane bioreactors}
- 3/286 . . {including two or more steps}
- 3/2866 . . {Particular arrangements for anaerobic reactors}
- 3/2873 . . . {with internal draft tube circulation}
- 3/288 . . . {comprising septic tanks combined with a filter}
- 3/2886 . . . {Two story combinations of the Imhoff tank type}
- 3/2893 . . . {with biogas recycling}
- 3/30 . Aerobic and anaerobic processes
- 3/301 . . {Aerobic and anaerobic treatment in the same reactor}
- 3/302 . . {Nitrification and denitrification treatment ([C02F 3/308 takes precedence](#))}
- 3/303 . . . {characterised by the nitrification}
- 3/305 . . . {characterised by the denitrification}
- 3/306 {Denitrification of water in soil}
- 3/307 . . . {characterised by direct conversion of nitrite to molecular nitrogen, e.g. by using the Anammox process}
- 3/308 . . {Biological phosphorus removal}
- 3/32 . characterised by the animals or plants used, e.g. algae
- 3/322 . . {use of algae}
- 3/325 . . . {as symbiotic combination of algae and bacteria}
- 3/327 . . {characterised by animals and plants}
- 3/34 . characterised by the microorganisms used
- 3/341 . . {Consortia of bacteria}
- 3/342 . . {characterised by the enzymes used}
- 3/343 . . {for digestion of grease, fat, oil}
- 3/344 . . {for digestion of mineral oil}
- 3/345 . . {for biological oxidation or reduction of sulfur compounds}
- 3/346 . . {Iron bacteria}
- 3/347 . . {Use of yeasts or fungi ([C02F 3/322 takes precedence](#))}
- 3/348 . . {characterised by the way or the form in which the microorganisms are added or dosed}
- 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](#))**
- 5/02 . Softening water by precipitation of the hardness
- 5/025 . . {Hot-water softening devices}
- 5/04 . . using phosphates ([C02F 5/06 takes precedence](#))
- 5/06 . . using calcium compounds
- 5/08 . Treatment of water with complexing chemicals or other solubilising agents for softening, scale prevention or scale removal, e.g. adding sequestering agents
- 5/083 . . {Mineral agents}
- 5/086 . . {Condensed phosphates}
- 5/10 . . using organic substances
- 5/105 . . . {combined with inorganic substances}
- 5/12 . . . containing nitrogen ([C02F 5/14 takes precedence](#))
- 5/125 {combined with inorganic substances}
- 5/14 . . . containing phosphorus
- 5/145 {combined with inorganic substances}
- 7/00 Aeration of stretches of water**
- 9/00 Multistage treatment of water, waste water or sewage**
- NOTES**
- 1. This group covers combined treatment operations, carried out in a defined order in three or more different treatment stages, each stage occurring in a separate location, e.g. apparatus, reactor or compartment.
- 2. This group does not cover treatments where the essential characteristic resides in an individual step of the treatment, which treatments are covered by groups [C02F 1/00](#) - [C02F 7/00](#).
- 9/20 . Portable or detachable small-scale multistage treatment devices, e.g. point of use or laboratory water purification systems
- 11/00 Treatment of sludge; Devices therefor**
- 11/002 . {Sludge treatment using liquids immiscible with water}
- 11/004 . {Sludge detoxification}
- 11/006 . {Electrochemical treatment, e.g. electro-oxidation or electro-osmosis}
- 11/008 . {Sludge treatment by fixation or solidification}
- 11/02 . Biological treatment
- 11/04 . . Anaerobic treatment; Production of methane by such processes

11/06	by oxidation (incinerators for burning waste liquors, e.g. sulfite liquor from paper-making plant F23G 7/04)	2101/32	Hydrocarbons, e.g. oil
11/08	Wet air oxidation	2101/322	{ Volatile compounds, e.g. benzene }
11/083	{ using deep well reactors }	2101/325	{ Emulsions }
11/086	{ in the supercritical state }	2101/327	{ Polyaromatic Hydrocarbons [PAH's] }
11/10	by pyrolysis	2101/34	containing oxygen
11/12	by de-watering, drying or thickening	2101/345	{ Phenols }
11/121	by mechanical de-watering	2101/36	containing halogen
11/122	using filter presses (C02F 11/123 takes precedence)	2101/363	{ PCB's; PCP's }
11/123	using belt or band filters	2101/366	{ Dioxine; Furan }
11/125	using screw filters	2101/38	containing nitrogen
11/126	using drum filters	2101/40	containing sulfur
11/127	by centrifugation		
11/128	using batch processes	2103/00	Nature of the water, waste water, sewage or sludge to be treated
11/13	by heating	2103/001	{ Runoff or storm water }
11/131	using electromagnetic or ultrasonic waves	2103/002	{ Grey water, e.g. from clothes washers, showers or dishwashers }
11/14	with addition of chemical agents	2103/003	{ Wastewater from hospitals, laboratories and the like, heavily contaminated by pathogenic microorganisms }
11/143	using inorganic substances (C02F 11/148 takes precedence)	2103/005	{ Black water originating from toilets }
11/145	using calcium compounds	2103/006	{ Dental effluents }
11/147	using organic substances (C02F 11/148 takes precedence)	2103/007	{ Contaminated open waterways, rivers, lakes or ponds }
11/148	Combined use of inorganic and organic substances, being added in the same treatment step	2103/008	{ Originating from marine vessels, ships and boats, e.g. bilge water or ballast water }
11/15	by treatment with electric, magnetic or electromagnetic fields; by treatment with ultrasonic waves (for the purpose of heating C02F 11/131)	2103/02	Non-contaminated water, e.g. for industrial water supply
11/16	using drying or composting beds	2103/023	{ Water in cooling circuits }
11/18	by thermal conditioning (by pyrolysis C02F 11/10)	2103/026	{ Treating water for medical or cosmetic purposes }
11/185	{ by pasteurisation }	2103/04	for obtaining ultra-pure water
11/20	by freezing	2103/06	Contaminated groundwater or leachate
2101/00	Nature of the contaminant	2103/08	Seawater, e.g. for desalination
2101/003	{ Explosive compounds, e.g. TNT }	2103/10	from quarries or from mining activities
2101/006	{ Radioactive compounds }	2103/12	from the silicate or ceramic industries, e.g. waste waters from cement or glass factories
2101/10	Inorganic compounds	2103/14	Paint wastes
2101/101	{ Sulfur compounds }	2103/16	from metallurgical processes, i.e. from the production, refining or treatment of metals, e.g. galvanic wastes
2101/103	{ Arsenic compounds }	2103/18	from the purification of gaseous effluents
2101/105	{ Phosphorus compounds }	2103/20	from animal husbandry
2101/106	{ Selenium compounds }	2103/22	from the processing of animals, e.g. poultry, fish, or parts thereof
2101/108	{ Boron compounds }	2103/24	from tanneries
2101/12	Halogens or halogen-containing compounds	2103/26	from the processing of plants or parts thereof
2101/14	Fluorine or fluorine-containing compounds	2103/28	from the paper or cellulose industry
2101/16	Nitrogen compounds, e.g. ammonia	2103/30	from the textile industry
2101/163	{ Nitrates }	2103/32	from the food or foodstuff industry, e.g. brewery waste waters
2101/166	{ Nitrites }	2103/322	{ from vegetable oil production, e.g. olive oil production }
2101/18	Cyanides	2103/325	{ from processes relating to the production of wine products }
2101/20	Heavy metals or heavy metal compounds	2103/327	{ from processes relating to the production of dairy products }
2101/203	{ Iron or iron compound }	2103/34	from industrial activities not provided for in groups C02F 2103/12 - C02F 2103/32
2101/206	{ Manganese or manganese compounds }	2103/343	{ from the pharmaceutical industry, e.g. containing antibiotics }
2101/22	Chromium or chromium compounds, e.g. chromates	2103/346	{ from semiconductor processing, e.g. waste water from polishing of wafers }
2101/30	Organic compounds		
2101/301	{ Detergents, surfactants }		
2101/303	{ Complexing agents }		
2101/305	{ Endocrine disruptive agents }		
2101/306	{ Pesticides }		
2101/308	{ Dyes; Colorants; Fluorescent agents }		

- 2103/36 . . from the manufacture of organic compounds
- 2103/365 . . . {from petrochemical industry (e.g. refineries)}
- 2103/38 . . . Polymers
- 2103/40 . . from the manufacture or use of photosensitive materials
- 2103/42 . from bathing facilities, e.g. swimming pools
- 2103/44 . from vehicle washing facilities
- 2201/00 Apparatus for treatment of water, waste water or sewage**
- 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)
- 2201/002 . Construction details of the apparatus
- 2201/003 . . Coaxial constructions, e.g. a cartridge located coaxially within another
- 2201/004 . . Seals, connections
- 2201/005 . . Valves
- 2201/006 . . Cartridges
- 2201/007 . . Modular design
- 2201/008 . Mobile apparatus and plants, e.g. mounted on a vehicle (for biological treatment C02F 2203/008)
- 2201/009 . Apparatus with independent power supply, e.g. solar cells, windpower, fuel cells (for electrolysis apparatus C02F 2201/46165)
- 2201/32 . Details relating to UV-irradiation devices
- 2201/322 . . Lamp arrangement
- 2201/3221 . . . Lamps suspended above a water surface or pipe
- 2201/3222 . . . Units using UV-light emitting diodes [LED]
- 2201/3223 . . . Single elongated lamp located on the central axis of a tubular reactor
- 2201/3224 . . . Units using UV-light guiding optical fibers
- 2201/3225 . . . Lamps immersed in an open channel, containing the liquid to be treated
- 2201/3226 . . . Units using UV-light emitting lasers
- 2201/3227 . . . Units with two or more lamps
- 2201/3228 . . . Units having reflectors, e.g. coatings, baffles, plates, mirrors
- 2201/324 . . Lamp cleaning installations, e.g. brushes
- 2201/326 . . Lamp control systems
- 2201/328 . . Having flow diverters (baffles)
- 2201/46 . Apparatus for electrochemical processes
- 2201/461 . . Electrolysis apparatus
- 2201/46105 . . . Details relating to the electrolytic devices
- 2201/4611 Fluid flow
- 2201/46115 Electrolytic cell with membranes or diaphragms
- 2201/4612 Controlling or monitoring
- 2201/46125 Electrical variables
- 2201/4613 Inverting polarity
- 2201/46135 Voltage
- 2201/4614 Current
- 2201/46145 Fluid flow
- 2201/4615 Time
- 2201/46155 Heating or cooling
- 2201/4616 Power supply
- 2201/46165 Special power supply, e.g. solar energy or batteries
- 2201/4617 DC only
- 2201/46175 Electrical pulses
- 2201/4618 Supplying or removing reactants or electrolyte
- 2201/46185 Recycling the cathodic or anodic feed
- 2201/4619 Supplying gas to the electrolyte (gas diffusion electrodes C02F 2001/46166)
- 2201/46195 Cells containing solid electrolyte
- 2201/48 . Devices for applying magnetic or electric fields
- 2201/483 . . using coils
- 2201/486 . . using antenna
- 2201/78 . Details relating to ozone treatment devices
- 2201/782 . . Ozone generators
- 2201/784 . . Diffusers or nozzles for ozonation
- 2203/00 Apparatus and plants for the biological treatment of water, waste water or sewage**
- 2203/002 . comprising an initial buffer container
- 2203/004 . comprising a selector reactor for promoting floc-forming or other bacteria
- 2203/006 . details of construction, e.g. specially adapted seals, modules, connections
- 2203/008 . Mobile apparatus and plants, e.g. mounted on a vehicle
- 2209/00 Controlling or monitoring parameters in water treatment**
- 2209/001 . Upstream control, i.e. monitoring for predictive control
- 2209/003 . Downstream control, i.e. outlet monitoring, e.g. to check the treating agents, such as halogens or ozone, leaving the process
- 2209/005 . Processes using a programmable logic controller [PLC]
- 2209/006 . . comprising a software program or a logic diagram
- 2209/008 . . comprising telecommunication features, e.g. modems or antennas
- 2209/01 . Density
- 2209/02 . Temperature
- 2209/03 . Pressure
- 2209/04 . Oxidation reduction potential [ORP]
- 2209/05 . Conductivity or salinity
- 2209/055 . . Hardness
- 2209/06 . pH
- 2209/07 . Alkalinity
- 2209/08 . Chemical Oxygen Demand [COD]; Biological Oxygen Demand [BOD]
- 2209/09 . Viscosity
- 2209/10 . Solids, e.g. total solids [TS], total suspended solids [TSS] or volatile solids [VS]
- 2209/105 . . Particle number, particle size or particle characterisation
- 2209/11 . Turbidity
- 2209/12 . Volatile Fatty Acids (VFAs)
- 2209/14 . NH₃-N
- 2209/15 . NO₃-N
- 2209/16 . Total nitrogen (tkN-N)
- 2209/18 . PO₄-P
- 2209/19 . SO₄-S
- 2209/20 . Total organic carbon [TOC]
- 2209/21 . Dissolved organic carbon [DOC]
- 2209/22 . O₂
- 2209/225 . . in the gas phase
- 2209/23 . O₃
- 2209/235 . . in the gas phase
- 2209/24 . CO₂
- 2209/245 . . in the gas phase

- 2209/26 . H₂S
- 2209/265 . . in the gas phase
- 2209/28 . CH₄
- 2209/285 . . CH₄ in the gas phase
- 2209/29 . Chlorine compounds
- 2209/30 . H₂
- 2209/32 . CO
- 2209/34 . N₂O
- 2209/36 . Biological material, e.g. enzymes or ATP
- 2209/38 . Gas flow rate
- 2209/40 . Liquid flow rate
- 2209/42 . Liquid level
- 2209/44 . Time
- 2209/445 . . Filter life

- 2301/00 General aspects of water treatment**
- 2301/02 . Fluid flow conditions
- 2301/022 . . Laminar
- 2301/024 . . Turbulent
- 2301/026 . . Spiral, helicoidal, radial
- 2301/028 . . Tortuous
- 2301/04 . Flow arrangements
- 2301/043 . . Treatment of partial or bypass streams
- 2301/046 . . Recirculation with an external loop
- 2301/06 . Pressure conditions
- 2301/063 . . Underpressure, vacuum
- 2301/066 . . Overpressure, high pressure
- 2301/08 . Multistage treatments, e.g. repetition of the same process step under different conditions
- 2301/10 . Temperature conditions for biological treatment
- 2301/103 . . Psychrophilic treatment
- 2301/106 . . Thermophilic treatment

- 2303/00 Specific treatment goals**
- 2303/02 . Odour removal or prevention of malodour
- 2303/04 . Disinfection
- 2303/06 . Sludge reduction, e.g. by lysis
- 2303/08 . Corrosion inhibition
- 2303/10 . Energy recovery
- 2303/12 . Prevention of foaming
- 2303/14 . Maintenance of water treatment installations
- 2303/16 . Regeneration of sorbents, filters
- 2303/18 . Removal of treatment agents after treatment
- 2303/185 . . The treatment agent being halogen or a halogenated compound
- 2303/20 . Prevention of biofouling
- 2303/22 . Eliminating or preventing deposits, scale removal, scale prevention ([C02F 1/042](#), [C02F 1/4602](#), [C02F 5/00](#) take precedence)
- 2303/24 . Separation of coarse particles, e.g. by using sieves or screens
- 2303/26 . Reducing the size of particles, liquid droplets or bubbles, e.g. by crushing, grinding, spraying, creation of microbubbles or nanobubbles

- 2305/00 Use of specific compounds during water treatment**
- 2305/02 . Specific form of oxidant
- 2305/023 . . Reactive oxygen species, singlet oxygen, OH radical
- 2305/026 . . Fenton's reagent
- 2305/04 . Surfactants, used as part of a formulation or alone
- 2305/06 . Nutrients for stimulating the growth of microorganisms

- 2305/08 . Nanoparticles or nanotubes
- 2305/10 . Photocatalysts
- 2305/12 . Inert solids used as ballast for improving sedimentation ([C02F 3/1226](#) takes precedence)
- 2305/14 . Additives which dissolves or releases substances when predefined environmental conditions are reached, e.g. pH or temperature

- 2307/00 Location of water treatment or water treatment device**
- 2307/02 . as part of a bottle
- 2307/04 . as part of a pitcher or jug
- 2307/06 . Mounted on or being part of a faucet, shower handle or showerhead
- 2307/08 . Treatment of wastewater in the sewer, e.g. to reduce grease, odour
- 2307/10 . as part of a potable water dispenser, e.g. for use in homes or offices
- 2307/12 . as part of household appliances such as dishwashers, laundry washing machines or vacuum cleaners
- 2307/14 . Treatment of water in water supply networks, e.g. to prevent bacterial growth