

CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

SEPARATING; MIXING

B01 PHYSICAL OR CHEMICAL PROCESSES OR APPARATUS IN GENERAL

B01L **CHEMICAL OR PHYSICAL LABORATORY APPARATUS FOR GENERAL USE** (apparatus for medical or pharmaceutical purposes [A61](#); apparatus for industrial purposes or laboratory apparatus whose construction and performance are comparable to that of similar industrial apparatus, see the relevant classes for industrial apparatus, particularly subclasses of [B01](#) and [C12](#); separating or distilling apparatus [B01D](#); mixing or stirring devices [B01F](#); atomisers [B05B](#); {vibrating devices, e.g. shaking tables,} sieves [B07B](#); corks, bungs [B65D](#); handling liquids in general [B67](#); vacuum pumps [F04](#); siphons [F04F 10/00](#); taps, stop-cocks [F16K](#); tubes, tube joints [F16L](#); apparatus specially adapted for investigating or analysing materials [G01](#), particularly [G01N](#); electrical or optical apparatus, see the relevant classes in Sections [G](#) and [H](#))

NOTE

This subclass covers only laboratory apparatus which is either applicable solely to laboratory purposes or which, by reason of its simple construction and adaptability, is such as would not be suitable for industrial use.

WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
- [B01L 3/14](#) covered by [B01L 3/50](#)
- 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 **Enclosures; Chambers** (fume cupboards [B08B](#); provided with manipulation devices, glove boxes [B25J](#); {industrial clean rooms [F24F 3/167](#); } cooling chambers [F25D](#))

WARNING

Group [B01L 1/00](#) is impacted by reclassification into group [B01L 1/52](#).

Groups [B01L 1/00](#) and [B01L 1/52](#) should be considered in order to perform a complete search.

- 1/02 . Air-pressure chambers; Air-locks therefor
- 1/025 . . {Environmental chambers (incubators for culturing cells [C12M 41/14](#); test chambers to test weather resistance [G01N 17/002](#))}
- 1/04 . Dust-free rooms or enclosures {(clean rooms suitable for industrial purposes [F24F 3/167](#))}
- 1/50 . {for storing hazardous materials in the laboratory, e.g. cupboards, waste containers (sample containers [B01L 3/50](#))}

1/52 . {Transportable laboratories; Field kits}

WARNING

Group [B01L 1/52](#) is incomplete pending reclassification of documents from groups [B01L 1/00](#) and [B01L 99/00](#).

Groups [B01L 1/00](#), [B01L 99/00](#), and [B01L 1/52](#) should be considered in order to perform a complete search.

3/00 **Containers or dishes for laboratory use, e.g. laboratory glassware** (bottles [B65D](#); apparatus for enzymology or microbiology {specially adapted for culturing} [C12M 1/00](#)); **Droppers** (receptacles for volumetric purposes [G01F](#))

- 3/02 . Burettes; Pipettes
- 3/0203 . . {Burettes, i.e. for withdrawing and redistributing liquids through different conduits}
- 3/0206 . . . {of the plunger pump type}
- 3/021 . . {Pipettes, i.e. with only one conduit for withdrawing and redistributing liquids}
- 3/0213 . . . {Accessories for glass pipettes; Gun-type pipettes, e.g. safety devices, pumps}
- 3/0217 . . . {of the plunger pump type (medical syringes [A61M](#))}

- 3/022 {Capillary pipettes, i.e. having very small bore ([B01L 3/0224](#) - [B01L 3/0237](#) take precedence)}
- 3/0224 {having mechanical means to set stroke length, e.g. movable stops ([B01L 3/0231](#), [B01L 3/0234](#) take precedence)}
- 3/0227 {Details of motor drive means ([B01L 3/0231](#), [B01L 3/0234](#) take precedence)}
- 3/0231 {having several coaxial pistons}
- 3/0234 {Repeating pipettes, i.e. for dispensing multiple doses from a single charge}
- 3/0237 {Details of electronic control, e.g. relating to user interface}
- 3/0241 . . {Drop counters; Drop formers (making arrays for combinatorial libraries [B01J 19/0046](#); automation of dispensing for analysis [G01N 35/10](#))}
- 3/0244 . . . {using pins}
- 3/0248 {Prongs, quill pen type dispenser}
- 3/0251 {Pin and ring type or pin in tube type dispenser}
- 3/0255 {characterized by the form or material of the pin tip}
- 3/0258 . . . {using stamps}
- 3/0262 . . . {using touch-off at substrate or container}
- 3/0265 . . . {using valves to interrupt or meter fluid flow, e.g. using solenoids or metering valves}
- 3/0268 . . . {using pulse dispensing or spraying, eg. inkjet type, piezo actuated ejection of droplets from capillaries}
- 3/0272 . . . {Dropper bottles}
- 3/0275 . . {Interchangeable or disposable dispensing tips}
- 3/0279 . . . {co-operating with positive ejection means}
- 3/0282 . . {mounted within a receptacle ([wash bottles B01L 3/10](#))}
- 3/0286 . . {Ergonomic aspects, e.g. form or arrangement of controls}
- 3/0289 . . {Apparatus for withdrawing or distributing predetermined quantities of fluid ([B01L 3/02](#) takes precedence; sample taking [G01N 1/00](#); sample taking within automatic analysers [G01N 35/00](#); volume measuring in general [G01F](#))}
- 3/0293 . . . {for liquids}
- 3/0296 {from piercable tubing, e.g. in extracorporeal blood sampling}
- 3/04 . . Crucibles
- 3/06 . . Crystallising dishes
- 3/08 . . Flasks ([specially adapted for distillation B01D B01D 3/10](#))}
- 3/10 . . Wash bottles
- 3/12 . . Gas jars or cylinders
- 3/16 . . Retorts
- 3/18 . . Spatulas
- 3/50 . . {Containers for the purpose of retaining a material to be analysed, e.g. test tubes ([devices for taking samples of blood A61B 5/15](#))}
- 3/502 . . {with fluid transport, e.g. in multi-compartment structures ([centrifugal-type cuvettes G01N 21/07](#); analysis by separation into components [G01N 30/00](#); automatic analysers [G01N 35/00](#))}
- 3/5021 . . . {Test tubes specially adapted for centrifugation purposes ([centrifuges B04B 5/04](#))}
- 3/50215 {using a float to separate phases}
- 3/5023 . . . {with a sample being transported to, and subsequently stored in an absorbent for analysis}
- 3/5025 . . . {for parallel transport of multiple samples}
- 3/50255 {Multi-well filtration}
- 3/5027 . . . {by integrated microfluidic structures, i.e. dimensions of channels and chambers are such that surface tension forces are important, e.g. lab-on-a-chip ([B01L 3/5023](#) takes precedence; micromixers [B01F 13/0059](#); microreactors for synthesis [B01J 19/0093](#); microcapillary devices in general [B81B 1/00](#))}
- 3/502707 {characterised by the manufacture of the container or its components ([manufacture of microstructural devices in general B81C](#); by shaping or joining plastic parts [B29C 59/00](#) [B29C 65/00](#), by laminating [B32B 37/00](#))}
- 3/502715 {characterised by interfacing components, e.g. fluidic, electrical, optical or mechanical interfaces}
- 3/502723 {characterised by venting arrangements}
- 3/50273 {characterised by the means or forces applied to move the fluids ([micropumps F04B 19/006](#), of the membrane type [F04B 43/043](#))}
- 3/502738 {characterised by integrated valves ([microvalves F16K 99/0001](#))}
- 3/502746 {characterised by the means for controlling flow resistance, e.g. flow controllers, baffles ([B01L 3/502738](#) takes precedence)}
- 3/502753 {characterised by bulk separation arrangements on lab-on-a-chip devices, e.g. for filtration or centrifugation ([separation in general B01D](#); microapparatus for analysis using electrophoresis [G01N 27/44791](#); sample preparation [G01N 1/28](#))}
- 3/502761 {specially adapted for handling suspended solids or molecules independently from the bulk fluid flow, e.g. for trapping or sorting beads, for physically stretching molecules ([investigating characteristics of particles G01N 15/00](#))}
- 3/502769 {characterised by multiphase flow arrangements}
- 3/502776 {specially adapted for focusing or laminating flows}
- 3/502784 {specially adapted for droplet or plug flow, e.g. digital microfluidics ([automatic analysis using a stream of discrete samples in a tube system G01N 35/08](#))}
- 3/502792 {for moving individual droplets on a plate, e.g. by locally altering surface tension}
- 3/5029 . . . {using swabs}
- 3/505 . . {flexible containers not provided for above}
- 3/5055 . . . {Hinged, e.g. opposable surfaces}
- 3/508 . . {rigid containers not provided for above}
- 3/5082 . . . {Test tubes [per se](#)}
- 3/50825 {Closing or opening means, corks, bungs ([closures for containers B65D](#); means for removing stoppers [B67B 7/02](#))}
- 3/5085 . . . {for multiple samples, e.g. microtitration plates}

- 3/50851 {specially adapted for heating or cooling samples (laboratory heating apparatus [B01L 7/00](#); incubators [C12M](#))}
- 3/50853 {with covers or lids}
- 3/50855 {using modular assemblies of strips or of individual wells}
- 3/50857 {using arrays or bundles of open capillaries for holding samples}
- 3/5088 . . . {confining liquids at a location by surface tension, e.g. virtual wells on plates, wires ([B01L 3/50857](#) takes precedence)}
- 3/52 . {Containers specially adapted for storing or dispensing a reagent ([B01L 3/02](#) takes precedence; containers for medical or pharmaceutical purposes [A61J 1/00](#); containers in general [B65D](#); storing or dispensing test elements [G01N 33/4875](#); automated reagent dispensing [G01N 35/1002](#))}
- 3/523 . . {with means for closing or opening}
- 3/527 . . {for a plurality of reagents}
- 3/54 . {Labware with identification means (identification of carriers, materials or components in automatic analysers [G01N 35/00732](#))}
- 3/545 . . {for laboratory containers}
- 3/5453 . . . {for test tubes}
- 3/5457 . . . {for container closures}
- 3/56 . {Labware specially adapted for transferring fluids}
- 3/561 . . {Tubes; Conduits (in general [F16L](#))}
- 3/563 . . {Joints or fittings (in general [F16L](#)); Separable fluid transfer means to transfer fluids between at least two containers, e.g. connectors}
- 3/5635 . . . {connecting two containers face to face, e.g. comprising a filter}
- 3/565 . . {Seals (in general [F16L](#))}
- 3/567 . . {Valves, taps or stop-cocks (in combination with burettes [B01L 3/0203](#); in general [F16K](#))}
- 3/569 . . {Glassware}
- 5/00 Gas handling apparatus** (gas jars or cylinders [B01L 3/12](#); cold traps, cold baffles [B01D 8/00](#); separation of gases or vapours [B01D 53/00](#); gas generators [B01J 7/00](#); steam traps [F16T](#))
- 5/02 . Gas collection apparatus, e.g. by bubbling under water (for sampling [G01N](#))
- 5/04 . Gas washing apparatus, e.g. by bubbling
- 7/00 Heating or cooling apparatus** (evaporators [B01D 1/00](#); drying gases or vapours, e.g. desiccators, [B01D 53/26](#); autoclaves [B01J 3/04](#); drying ovens [F26B](#); furnaces, ovens [F27](#)); **Heat insulating devices**
- 7/02 . Water baths; Sand baths; Air baths
- 7/04 . Heat insulating devices, e.g. jackets for flasks
- 7/50 . {Cryostats}
- 7/52 . {with provision for submitting samples to a predetermined sequence of different temperatures, e.g. for treating nucleic acid samples (amplification or hybridisation processes *per se* [C12Q 1/68](#); controlling sequential reactions for synthesis [B01J 19/0046](#))}
- 7/525 . . {with physical movement of samples between temperature zones}
- 7/5255 . . . {by moving sample containers}
- 7/54 . {using spatial temperature gradients}

9/00 Supporting devices; Holding devices (tweezers, tongs [B25B](#))

WARNING

Group [B01L 9/00](#) is impacted by reclassification into group [B01L 9/56](#).

Groups [B01L 9/00](#) and [B01L 9/56](#) should be considered in order to perform a complete search.

- 9/02 . Laboratory benches or tables; Fittings therefor
- 9/04 . Retort stands; Retort clamps
- 9/06 . Test-tube stands; Test-tube holders
- 9/065 . . {specially adapted for capillary tubes}
- 9/50 . {Clamping means, tongs (in general [F16B 2/06](#))}
- 9/52 . {Supports specially adapted for flat sample carriers, e.g. for plates, slides, chips}
- 9/523 . . {for multisample carriers, e.g. used for microtitration plates}
- 9/527 . . {for microfluidic devices, e.g. used for lab-on-a-chip}
- 9/54 . {Supports specially adapted for pipettes and burettes (automated pipetting stations [G01N 35/10](#))}
- 9/543 . . {for disposable pipette tips, e.g. racks or cassettes}
- 9/547 . . {for dispensing pins}
- 9/56 . {Means for indicating position of a recipient or sample in an array}

WARNING

Group [B01L 9/56](#) is incomplete pending reclassification of documents from groups [B01L 9/00](#) and [B01L 99/00](#).

Groups [B01L 9/00](#), [B01L 99/00](#), and [B01L 9/56](#) should be considered in order to perform a complete search.

13/00 {Cleaning or rinsing apparatus}

WARNING

Group [B01L 13/00](#) is incomplete pending reclassification of documents from group [B01L 99/00](#).

Groups [B01L 99/00](#) and [B01L 13/00](#) should be considered in order to perform a complete search.

- 13/02 . {for receptacle or instruments}

WARNING

Group [B01L 13/02](#) is incomplete pending reclassification of documents from group [B01L 99/00](#).

Groups [B01L 99/00](#) and [B01L 13/02](#) should be considered in order to perform a complete search.

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

WARNING

Group [B01L 99/00](#) is impacted by reclassification into groups [B01L 1/52](#), [B01L 9/56](#), [B01L 13/00](#), and [B01L 13/02](#).

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

2200/00	Solutions for specific problems relating to chemical or physical laboratory apparatus	2300/02	. Identification, exchange or storage of information
2200/02	. Adapting objects or devices to another	2300/021	. . Identification, e.g. bar codes
2200/021	. . Adjust spacings in an array of wells, pipettes or holders, format transfer between arrays of different size or geometry	2300/022	. . . Transponder chips
2200/022	. . . Variable spacings	2300/023	. . Sending and receiving of information, e.g. using bluetooth
2200/023	. . adapted for different sizes of tubes, tips or container	2300/024	. . Storing results with means integrated into the container
2200/025	. . Align devices or objects to ensure defined positions relative to each other	2300/025	. . Displaying results or values with integrated means
2200/026	. . Fluid interfacing between devices or objects, e.g. connectors, inlet details	2300/026	. . . Drum counters
2200/027	. . . for microfluidic devices	2300/027	. . . Digital display, e.g. LCD, LED
2200/028	. . Modular arrangements	2300/028	. . . Graduation
2200/04	. Exchange or ejection of cartridges, containers or reservoirs	2300/04	. Closures and closing means
2200/06	. Fluid handling related problems	2300/041	. . Connecting closures to device or container
2200/0605	. . Metering of fluids	2300/042	. . . Caps; Plugs
2200/061	. . Counting droplets	2300/043	. . . Hinged closures
2200/0615	. . Loss of fluid by dripping	2300/044	. . . pierceable, e.g. films, membranes
2200/0621	. . Control of the sequence of chambers filled or emptied	2300/045	. . . whereby the whole cover is slidable
2200/0626	. . using levitated droplets	2300/046	. . Function or devices integrated in the closure
2200/0631	. . Purification arrangements, e.g. solid phase extraction [SPE]	2300/047	. . . Additional chamber, reservoir
2200/0636	. . Focussing flows, e.g. to laminate flows	2300/048	. . . enabling gas exchange, e.g. vents
2200/0642	. . Filling fluids into wells by specific techniques	2300/049	. . . Valves integrated in closure
2200/0647	. . Handling flowable solids, e.g. microscopic beads, cells, particles	2300/06	. Auxiliary integrated devices, integrated components
2200/0652	. . . Sorting or classification of particles or molecules	2300/0609	. . Holders integrated in container to position an object
2200/0657	. . . Pipetting powder	2300/0618	. . . for removable separation walls
2200/0663	. . . Stretching or orienting elongated molecules or particles	2300/0627	. . Sensor or part of a sensor is integrated
2200/0668	. . . Trapping microscopic beads	2300/0636	. . . Integrated biosensor, microarrays
2200/0673	. . Handling of plugs of fluid surrounded by immiscible fluid	2300/0645	. . . Electrodes
2200/0678	. . Facilitating or initiating evaporation	2300/0654	. . . Lenses; Optical fibres
2200/0684	. . Venting, avoiding backpressure, avoid gas bubbles	2300/0663	. . . Whole sensors
2200/0689	. . Sealing	2300/0672	. . Integrated piercing tool
2200/0694	. . Creating chemical gradients in a fluid	2300/0681	. . Filter
2200/08	. Ergonomic or safety aspects of handling devices	2300/069	. . Absorbents; Gels to retain a fluid
2200/082	. . Handling hazardous material	2300/08	. Geometry, shape and general structure
2200/085	. . Protection against injuring the user	2300/0803	. . Disc shape
2200/087	. . Ergonomic aspects	2300/0806	. . . Standardised forms, e.g. compact disc [CD] format
2200/10	. Integrating sample preparation and analysis in single entity, e.g. lab-on-a-chip concept	2300/0809	. . rectangular shaped
2200/12	. Specific details about manufacturing devices	2300/0812	. . . Bands; Tapes
2200/14	. Process control and prevention of errors	2300/0816	. . . Cards, e.g. flat sample carriers usually with flow in two horizontal directions
2200/141	. . Preventing contamination, tampering	2300/0819	. . . Microarrays; Biochips
2200/142	. . Preventing evaporation	2300/0822	. . . Slides
2200/143	. . Quality control, feedback systems	2300/0825	. . . Test strips
2200/145	. . . Detecting door closure	2300/0829	. . . Multi-well plates; Microtitration plates
2200/146	. . . Employing pressure sensors	2300/0832	. . cylindrical, tube shaped
2200/147	. . . Employing temperature sensors	2300/0835	. . . Ampoules
2200/148	. . Specific details about calibrations	2300/0838	. . . Capillaries
2200/16	. Reagents, handling or storing thereof	2300/0841	. . . Drums
2200/18	. Transport of container or devices	2300/0845	. . . Filaments, strings, fibres, i.e. not hollow
2200/185	. . Long distance transport, e.g. mailing	2300/0848	. . Specific forms of parts of containers
2300/00	Additional constructional details	2300/0851	. . . Bottom walls
		2300/0854	. . . Double walls
		2300/0858	. . . Side walls
		2300/0861	. . Configuration of multiple channels and/or chambers in a single devices
		2300/0864	. . . comprising only one inlet and multiple receiving wells, e.g. for separation, splitting
		2300/0867	. . . Multiple inlets and one sample wells, e.g. mixing, dilution
		2300/087	. . . Multiple sequential chambers

2300/0874	. . . Three dimensional network	2400/0418	. . . . electro-osmotic flow [EOF]
2300/0877	. . . Flow chambers	2400/0421	. . . . electrophoretic flow
2300/088	. . . Channel loops	2400/0424	. . . . Dielectrophoretic forces
2300/0883	. . . Serpentine channels	2400/0427	. . . . Electrowetting
2300/0887	. . Laminated structure	2400/043	. . . magnetic forces
2300/089	. . Virtual walls for guiding liquids	2400/0433	. . . vibrational forces
2300/0893	. . having a very large number of wells, microfabricated wells	2400/0436	. . . . acoustic forces, e.g. surface acoustic waves [SAW]
2300/0896	. . Nanoscaled	2400/0439	. . . . ultrasonic vibrations, vibrating piezo elements
2300/10	. Means to control humidity and/or other gases	2400/0442	. . . thermal energy, e.g. vaporisation, bubble jet
2300/105	. . using desiccants	2400/0445	. . . . Natural or forced convection
2300/12	. Specific details about materials	2400/0448	. . . . Marangoni flow; Thermocapillary effect
2300/123	. . Flexible; Elastomeric	2400/0451	. . . . Thermophoresis; Thermodiffusion; Soret-effect
2300/126	. . Paper	2400/0454	. . . radiation pressure, optical tweezers
2300/14	. Means for pressure control	2400/0457	. . . passive flow or gravitation
2300/16	. Surface properties and coatings	2400/046	. . . Chemical or electrochemical formation of bubbles
2300/161	. . Control and use of surface tension forces, e.g. hydrophobic, hydrophilic	2400/0463	. . . Hydrodynamic forces, venturi nozzles
2300/163	. . . Biocompatibility	2400/0466	. . . Evaporation to induce underpressure
2300/165	. . . Specific details about hydrophobic, oleophobic surfaces	2400/0469	. . . Buoyancy
2300/166	. . . . Suprahydrophobic; Ultraphobic; Lotus-effect	2400/0472	. . . Diffusion
2300/168	. . Specific optical properties, e.g. reflective coatings	2400/0475	. . specific mechanical means and fluid pressure
2300/18	. Means for temperature control	2400/0478	. . . pistons
2300/1805	. . Conductive heating, heat from thermostatted solids is conducted to receptacles, e.g. heating plates, blocks	2400/0481	. . . squeezing of channels or chambers
2300/1811	. . . using electromagnetic induction heating	2400/0484	. . . Cantilevers
2300/1816	. . . using induction heating	2400/0487	. . . fluid pressure, pneumatics
2300/1822	. . . using Peltier elements	2400/049	. . . . vacuum
2300/1827	. . . using resistive heater	2400/0493	. . Specific techniques used
2300/1833	. . using electrical currents in the sample itself	2400/0496	. . . Travelling waves, e.g. in combination with electrical or acoustic forces
2300/1838	. . using fluid heat transfer medium	2400/06	. Valves, specific forms thereof
2300/1844	. . . using fans	2400/0605	. . check valves
2300/185	. . . using a liquid as fluid	2400/0611	. . . duck bill valves
2300/1855	. . using phase changes in a medium	2400/0616	. . . Ball valves
2300/1861	. . using radiation	2400/0622	. . distribution valves, valves having multiple inlets and/or outlets, e.g. metering valves, multi-way valves
2300/1866	. . . Microwaves	2400/0627	. . Molecular gates forcing or inhibiting diffusion
2300/1872	. . . Infrared light	2400/0633	. . with moving parts
2300/1877	. . using chemical reactions	2400/0638	. . . membrane valves, flap valves
2300/1883	. . using thermal insulation	2400/0644	. . . rotary valves
2300/1888	. . Pipettes or dispensers with temperature control	2400/065	. . . sliding valves
2300/1894	. . Cooling means; Cryo cooling	2400/0655	. . . pinch valves
2400/00	Moving or stopping fluids	2400/0661	. . . shape memory polymer valves
2400/02	. Drop detachment mechanisms of single droplets from nozzles or pins	2400/0666	. . . Solenoid valves
2400/021	. . non contact spotting by inertia, i.e. abrupt deceleration of the nozzle or pin	2400/0672	. . . Swellable plugs
2400/022	. . droplet contacts the surface of the receptacle	2400/0677	. . phase change valves; Melttable, freezing, dissolvable plugs; Destructible barriers
2400/024	. . . touch-off at the side wall of the receptacle	2400/0683	. . . mechanically breaking a wall or membrane within a channel or chamber
2400/025	. . . tapping tip on substrate	2400/0688	. . surface tension valves, capillary stop, capillary break
2400/027	. . electrostatic forces between substrate and tip	2400/0694	. . vents used to stop and induce flow, backpressure valves
2400/028	. . Pin is moved through a ring which is filled with a fluid	2400/08	. Regulating or influencing the flow resistance
2400/04	. Moving fluids with specific forces or mechanical means	2400/082	. . Active control of flow resistance, e.g. flow controllers
2400/0403	. . specific forces	2400/084	. . Passive control of flow resistance
2400/0406	. . . capillary forces	2400/086	. . . using baffles or other fixed flow obstructions
2400/0409	. . . centrifugal forces	2400/088	. . . by specific surface properties
2400/0412	. . . . using additionally coriolis forces		
2400/0415	. . . electrical forces, e.g. electrokinetic		