

# 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

### 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.}

<b>1/00</b>	<b>Enclosures; Chambers</b> (provided with manipulation devices or glove boxes <a href="#">B25J 21/00</a> )	3/0234	. . . . {Repeating pipettes, i.e. for dispensing multiple doses from a single charge}
1/02	. Air-pressure chambers; Air-locks therefor	3/0237	. . . . {Details of electronic control, e.g. relating to user interface}
1/025	. . {Environmental chambers (incubators for culturing cells <a href="#">C12M 41/14</a> ; test chambers to test weather resistance <a href="#">G01N 17/002</a> )}	3/0241	. . {Drop counters; Drop formers (making arrays for combinatorial libraries <a href="#">B01J 19/0046</a> ; automation of dispensing for analysis <a href="#">G01N 35/10</a> )}
1/04	. Dust-free rooms or enclosures	3/0244	. . . {using pins}
1/50	. {for storing hazardous materials in the laboratory, e.g. cupboards, waste containers (sample containers <a href="#">B01L 3/50</a> )}	3/0248	. . . . {Prongs, quill pen type dispenser}
1/52	. {Transportable laboratories; Field kits}	3/0251	. . . . {Pin and ring type or pin in tube type dispenser}
<b>3/00</b>	<b>Containers or dishes for laboratory use, e.g. laboratory glassware; Droppers</b>	3/0255	. . . . {characterized by the form or material of the pin tip}
	<b>NOTE</b>	3/0258	. . . {using stamps}
	Petri dishes for enzymology or microbiology are classified in group <a href="#">C12M 1/22</a> .	3/0262	. . . {using touch-off at substrate or container}
3/02	. Burettes; Pipettes	3/0265	. . . {using valves to interrupt or meter fluid flow, e.g. using solenoids or metering valves}
3/0203	. . {Burettes, i.e. for withdrawing and redistributing liquids through different conduits}	3/0268	. . . {using pulse dispensing or spraying, eg. inkjet type, piezo actuated ejection of droplets from capillaries}
3/0206	. . . {of the plunger pump type}	3/0272	. . . {Dropper bottles}
3/021	. . {Pipettes, i.e. with only one conduit for withdrawing and redistributing liquids}	3/0275	. . {Interchangeable or disposable dispensing tips}
3/0213	. . . {Accessories for glass pipettes; Gun-type pipettes, e.g. safety devices, pumps}	3/0279	. . . {co-operating with positive ejection means}
3/0217	. . . {of the plunger pump type (medical syringes <a href="#">A61M</a> )}	3/0282	. . {mounted within a receptacle (wash bottles <a href="#">B01L 3/10</a> )}
3/022	. . . . {Capillary pipettes, i.e. having very small bore ( <a href="#">B01L 3/0224</a> - <a href="#">B01L 3/0237</a> take precedence)}	3/0286	. . {Ergonomic aspects, e.g. form or arrangement of controls}
3/0224	. . . . {having mechanical means to set stroke length, e.g. movable stops ( <a href="#">B01L 3/0231</a> , <a href="#">B01L 3/0234</a> take precedence)}	3/0289	. . {Apparatus for withdrawing or distributing predetermined quantities of fluid ( <a href="#">B01L 3/02</a> takes precedence; sample taking <a href="#">G01N 1/00</a> ; sample taking within automatic analysers <a href="#">G01N 35/00</a> ; volume measuring in general <a href="#">G01F</a> )}
3/0227	. . . . {Details of motor drive means ( <a href="#">B01L 3/0231</a> , <a href="#">B01L 3/0234</a> take precedence)}	3/0293	. . . {for liquids}
3/0231	. . . . {having several coaxial pistons}	3/0296	. . . . {from piercable tubing, e.g. in extracorporeal blood sampling}
		3/04	. Crucibles
		3/06	. Crystallising dishes

- 3/08 . . . . . Flasks
- 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 33/30; 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 (by shaping or joining plastic parts [B29C 59/00, B29C 65/00](#); by laminating [B32B 37/00](#); manufacture of microstructural devices in general [B81C](#))}
- 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 or cold baffles B01D 8/00](#))
- 5/02 . . . . . Gas collection apparatus, e.g. by bubbling under water ([for sampling G01N 1/22](#))
- 5/04 . . . . . Gas washing apparatus, e.g. by bubbling
- 7/00** . . . . . **Heating or cooling apparatus** ([autoclaves B01J 3/04](#)); **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 ( <a href="#">amplification or hybridisation processes per se C12Q 1/68; controlling sequential reactions for synthesis B01J 19/0046</a> )}	2200/0647	. . Handling flowable solids, e.g. microscopic beads, cells, particles
7/525	. . {with physical movement of samples between temperature zones}	2200/0652	. . . Sorting or classification of particles or molecules
7/5255	. . . {by moving sample containers}	2200/0657	. . . Pipetting powder
7/54	. {using spatial temperature gradients}	2200/0663	. . . Stretching or orienting elongated molecules or particles
<b>9/00</b>	<b>Supporting devices; Holding devices</b>	2200/0668	. . . Trapping microscopic beads
9/02	. Laboratory benches or tables; Fittings therefor	2200/0673	. . Handling of plugs of fluid surrounded by immiscible fluid
9/04	. Retort stands; Retort clamps	2200/0678	. . Facilitating or initiating evaporation
9/06	. Test-tube stands; Test-tube holders	2200/0684	. . Venting, avoiding backpressure, avoid gas bubbles
9/065	. . {specially adapted for capillary tubes}	2200/0689	. . Sealing
9/50	. {Clamping means, tongs ( <a href="#">in general F16B 2/06</a> )}	2200/0694	. . Creating chemical gradients in a fluid
9/52	. {Supports specially adapted for flat sample carriers, e.g. for plates, slides, chips}	2200/08	. Ergonomic or safety aspects of handling devices
9/523	. . {for multisample carriers, e.g. used for microtitration plates}	2200/082	. . Handling hazardous material
9/527	. . {for microfluidic devices, e.g. used for lab-on-a-chip}	2200/085	. . Protection against injuring the user
9/54	. {Supports specially adapted for pipettes and burettes ( <a href="#">automated pipetting stations G01N 35/10</a> )}	2200/087	. . Ergonomic aspects
9/543	. . {for disposable pipette tips, e.g. racks or cassettes}	2200/10	. Integrating sample preparation and analysis in single entity, e.g. lab-on-a-chip concept
9/547	. . {for dispensing pins}	2200/12	. Specific details about manufacturing devices
9/56	. {Means for indicating position of a recipient or sample in an array}	2200/14	. Process control and prevention of errors
<b>13/00</b>	<b>{Cleaning or rinsing apparatus}</b>	2200/141	. . Preventing contamination, tampering
13/02	. {for receptacle or instruments}	2200/142	. . Preventing evaporation
<b>99/00</b>	<b>Subject matter not provided for in other groups of this subclass</b>	2200/143	. . Quality control, feedback systems
<b>2200/00</b>	<b>Solutions for specific problems relating to chemical or physical laboratory apparatus</b>	2200/145	. . . Detecting door closure
2200/02	. Adapting objects or devices to another	2200/146	. . . Employing pressure sensors
2200/021	. . Adjust spacings in an array of wells, pipettes or holders, format transfer between arrays of different size or geometry	2200/147	. . . Employing temperature sensors
2200/022	. . . Variable spacings	2200/148	. . Specific details about calibrations
2200/023	. . adapted for different sizes of tubes, tips or container	2200/16	. Reagents, handling or storing thereof
2200/025	. . Align devices or objects to ensure defined positions relative to each other	2200/18	. Transport of container or devices
2200/026	. . Fluid interfacing between devices or objects, e.g. connectors, inlet details	2200/185	. . Long distance transport, e.g. mailing
2200/027	. . . for microfluidic devices	<b>2300/00</b>	<b>Additional constructional details</b>
2200/028	. . Modular arrangements	2300/02	. Identification, exchange or storage of information
2200/04	. Exchange or ejection of cartridges, containers or reservoirs	2300/021	. . Identification, e.g. bar codes
2200/06	. Fluid handling related problems	2300/022	. . . Transponder chips
2200/0605	. . Metering of fluids	2300/023	. . Sending and receiving of information, e.g. using bluetooth
2200/061	. . Counting droplets	2300/024	. . Storing results with means integrated into the container
2200/0615	. . Loss of fluid by dripping	2300/025	. . Displaying results or values with integrated means
2200/0621	. . Control of the sequence of chambers filled or emptied	2300/026	. . . Drum counters
2200/0626	. . using levitated droplets	2300/027	. . . Digital display, e.g. LCD, LED
2200/0631	. . Purification arrangements, e.g. solid phase extraction [SPE]	2300/028	. . . Graduation
2200/0636	. . Focussing flows, e.g. to laminate flows	2300/04	. Closures and closing means
2200/0642	. . Filling fluids into wells by specific techniques	2300/041	. . Connecting closures to device or container
		2300/042	. . . Caps; Plugs
		2300/043	. . . Hinged closures
		2300/044	. . . pierceable, e.g. films, membranes
		2300/045	. . . whereby the whole cover is slidable
		2300/046	. . Function or devices integrated in the closure
		2300/047	. . . Additional chamber, reservoir
		2300/048	. . . enabling gas exchange, e.g. vents
		2300/049	. . . Valves integrated in closure
		2300/06	. Auxiliary integrated devices, integrated components
		2300/0609	. . Holders integrated in container to position an object
		2300/0618	. . . for removable separation walls
		2300/0627	. . Sensor or part of a sensor is integrated
		2300/0636	. . . Integrated biosensor, microarrays

2300/0645	. . .	Electrodes
2300/0654	. . .	Lenses; Optical fibres
2300/0663	. . .	Whole sensors
2300/0672	. .	Integrated piercing tool
2300/0681	. .	Filter
2300/069	. .	Absorbents; Gels to retain a fluid
2300/08	.	Geometry, shape and general structure
2300/0803	. .	Disc shape
2300/0806	. . .	Standardised forms, e.g. compact disc [CD] format
2300/0809	. .	rectangular shaped
2300/0812	. . .	Bands; Tapes
2300/0816	. . .	Cards, e.g. flat sample carriers usually with flow in two horizontal directions
2300/0819	. . .	Microarrays; Biochips
2300/0822	. . .	Slides
2300/0825	. . .	Test strips
2300/0829	. . .	Multi-well plates; Microtitration plates
2300/0832	. .	cylindrical, tube shaped
2300/0835	. . .	Ampoules
2300/0838	. . .	Capillaries
2300/0841	. . .	Drums
2300/0845	. . .	Filaments, strings, fibres, i.e. not hollow
2300/0848	. .	Specific forms of parts of containers
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
2300/0877	. . .	Flow chambers
2300/088	. . .	Channel loops
2300/0883	. . .	Serpentine channels
2300/0887	. .	Laminated structure
2300/089	. .	Virtual walls for guiding liquids
2300/0893	. .	having a very large number of wells, microfabricated wells
2300/0896	. .	Nanoscaled
2300/10	.	Means to control humidity and/or other gases
2300/105	. .	using desiccants
2300/12	.	Specific details about materials
2300/123	. .	Flexible; Elastomeric
2300/126	. .	Paper
2300/14	.	Means for pressure control
2300/16	.	Surface properties and coatings
2300/161	. .	Control and use of surface tension forces, e.g. hydrophobic, hydrophilic
2300/163	. . .	Biocompatibility
2300/165	. . .	Specific details about hydrophobic, oleophobic surfaces
2300/166	. . . .	Suprahydrophobic; Ultraphobic; Lotus-effect
2300/168	. .	Specific optical properties, e.g. reflective coatings
2300/18	.	Means for temperature control
2300/1805	. .	Conductive heating, heat from thermostatted solids is conducted to receptacles, e.g. heating plates, blocks
2300/1811	. . .	using electromagnetic induction heating
2300/1816	. . .	using induction heating
2300/1822	. . .	using Peltier elements
2300/1827	. . .	using resistive heater
2300/1833	. .	using electrical currents in the sample itself
2300/1838	. .	using fluid heat transfer medium
2300/1844	. . .	using fans
2300/185	. . .	using a liquid as fluid
2300/1855	. .	using phase changes in a medium
2300/1861	. .	using radiation
2300/1866	. . .	Microwaves
2300/1872	. . .	Infrared light
2300/1877	. .	using chemical reactions
2300/1883	. .	using thermal insulation
2300/1888	. .	Pipettes or dispensers with temperature control
2300/1894	. .	Cooling means; Cryo cooling
<b>2400/00</b>		<b>Moving or stopping fluids</b>
2400/02	.	Drop detachment mechanisms of single droplets from nozzles or pins
2400/021	. .	non contact spotting by inertia, i.e. abrupt deceleration of the nozzle or pin
2400/022	. .	droplet contacts the surface of the receptacle
2400/024	. . .	touch-off at the side wall of the receptacle
2400/025	. . .	tapping tip on substrate
2400/027	. .	electrostatic forces between substrate and tip
2400/028	. .	Pin is moved through a ring which is filled with a fluid
2400/04	.	Moving fluids with specific forces or mechanical means
2400/0403	. . .	specific forces
2400/0406	. . .	capillary forces
2400/0409	. . .	centrifugal forces
2400/0412	. . . .	using additionally coriolis forces
2400/0415	. . .	electrical forces, e.g. electrokinetic
2400/0418	. . . .	electro-osmotic flow [EOF]
2400/0421	. . . .	electrophoretic flow
2400/0424	. . . .	Dielectrophoretic forces
2400/0427	. . . .	Electrowetting
2400/043	. . .	magnetic forces
2400/0433	. . .	vibrational forces
2400/0436	. . . .	acoustic forces, e.g. surface acoustic waves [SAW]
2400/0439	. . . .	ultrasonic vibrations, vibrating piezo elements
2400/0442	. . .	thermal energy, e.g. vaporisation, bubble jet
2400/0445	. . . .	Natural or forced convection
2400/0448	. . . .	Marangoni flow; Thermocapillary effect
2400/0451	. . . .	Thermophoresis; Thermodiffusion; Soret-effect
2400/0454	. . .	radiation pressure, optical tweezers
2400/0457	. . .	passive flow or gravitation
2400/046	. . .	Chemical or electrochemical formation of bubbles
2400/0463	. . .	Hydrodynamic forces, venturi nozzles
2400/0466	. . .	Evaporation to induce underpressure
2400/0469	. . .	Buoyancy
2400/0472	. . .	Diffusion
2400/0475	. .	specific mechanical means and fluid pressure
2400/0478	. . .	pistons
2400/0481	. . .	squeezing of channels or chambers
2400/0484	. . .	Cantilevers
2400/0487	. . .	fluid pressure, pneumatics

- 2400/049 . . . . vacuum
- 2400/0493 . . Specific techniques used
- 2400/0496 . . . Travelling waves, e.g. in combination with electrical or acoustic forces
- 2400/06 . Valves, specific forms thereof
- 2400/0605 . . check valves
- 2400/0611 . . . duck bill valves
- 2400/0616 . . . Ball valves
- 2400/0622 . . distribution valves, valves having multiple inlets and/or outlets, e.g. metering valves, multi-way valves
- 2400/0627 . . Molecular gates forcing or inhibiting diffusion
- 2400/0633 . . with moving parts
- 2400/0638 . . . membrane valves, flap valves
- 2400/0644 . . . rotary valves
- 2400/065 . . . sliding valves
- 2400/0655 . . . pinch valves
- 2400/0661 . . . shape memory polymer valves
- 2400/0666 . . . Solenoid valves
- 2400/0672 . . . Swellable plugs
- 2400/0677 . . phase change valves; Meltable, freezing, dissolvable plugs; Destructible barriers
- 2400/0683 . . . mechanically breaking a wall or membrane within a channel or chamber
- 2400/0688 . . surface tension valves, capillary stop, capillary break
- 2400/0694 . . vents used to stop and induce flow, backpressure valves
- 2400/08 . Regulating or influencing the flow resistance
- 2400/082 . . Active control of flow resistance, e.g. flow controllers
- 2400/084 . . Passive control of flow resistance
- 2400/086 . . . using baffles or other fixed flow obstructions
- 2400/088 . . . by specific surface properties