

CPC COOPERATIVE PATENT CLASSIFICATION

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.

WARNING

The following IPC groups are not used in the CPC scheme. Subject matter covered by these groups is classified in the following CPC groups:

- [B01L 3/14](#) covered by [B01L 3/50](#)

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|-------------|---|--------|--|
| 1/00 | Enclosures; Chambers (fume cupboards B08B ; provided with manipulation devices, glove boxes B25J ; cooling chambers F25D) | 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 C12M 41/14 , Test chambers to test weather resistance G01N 17/002)} | 3/0241 | . . {Drop counters; Drop formers (making arrays for combinatorial libraries B01J 19/0046 ; automation of dispensing for analysis G01N 35/10)} |
| 1/04 | . Dust-free rooms or enclosures {(clean rooms suitable for industrial purposes F24F 3/161)} | 3/0244 | . . . {using pins} |
| 1/50 | . {for storing hazardous materials in the laboratory, e.g. cupboards, waste containers} | 3/0248 | {Prongs, quill pen type dispenser} |
| 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) | 3/0251 | {Pin and ring type or pin in tube type dispenser} |
| 3/02 | . Burettes; Pipettes | 3/0255 | {characterized by the form or material of the pin tip} |
| 3/0203 | . . {Burettes, i.e. for withdrawing and redistributing liquids through different conduits} | 3/0258 | . . . {using stamps} |
| 3/0206 | . . . {of the plunger pump type} | 3/0262 | . . . {using touch-off at substrate or container} |
| 3/021 | . . {Pipettes, i.e. with only one conduit for withdrawing and redistributing liquids} | 3/0265 | . . . {using valves to interrupt or meter fluid flow, e.g. using solenoids or metering valves} |
| 3/0213 | . . . {Accessories for glass pipettes; Gun-type pipettes, e.g. safety devices, pumps} | 3/0268 | . . . {using pulse dispensing or spraying, eg. inkjet type, piezo actuated ejection of droplets from capillaries} |
| 3/0217 | . . . {of the plunger pump type (medical syringes A61M)} | 3/0272 | . . . {Dropper bottles} |
| 3/022 | {Capillary pipettes, i.e. having very small bore (B01L 3/0224 - B01L 3/0237 take precedence)} | 3/0275 | . . {Interchangeable or disposable dispensing tips} |
| 3/0224 | {having mechanical means to set stroke length, e.g. movable stops (B01L 3/0231 , B01L 3/0234 take precedence)} | 3/0279 | . . . {co-operating with positive ejection means} |
| 3/0227 | {Details of motor drive means (B01L 3/0231 , B01L 3/0234 take precedence)} | 3/0282 | . . {mounted within a receptacle (wash bottles B01L 3/10)} |
| 3/0231 | {having several coaxial pistons} | 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
- 3/14 . Test tubes {(devices for taking samples of blood
[A61B 5/14](#))} (not used, see [B01L 3/50](#) and
subgroups)]
- WARNING**
- This is no longer used for the classification
of new documents as from 1 April 2012. The
back-file is being transferred to [B01L 3/50](#) and
subgroups
- 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 5/14](#))}
- 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 micro-fluidic 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](#); micro-capillary
devices in general [B81B 1/00](#))}
- 3/502707 {characterised by the manufacture of the
container or its components (manufacture of
micro-structural 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 (micro pumps
[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](#); micro-apparatus 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 micro-fluidics (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. micro-titration
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}

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|----------------|---|---------------------------|--|
| 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) | 2200/0605 | . . Metering of fluids |
| | | 2200/061 | . . Counting droplets |
| | | 2200/0615 | . . Loss of fluid by dripping |
| 5/02 | . Gas collection apparatus, e.g. by bubbling under water (for sampling G01N) | 2200/0621 | . . Control of the sequence of chambers filled or emptied |
| 5/04 | . Gas washing apparatus, e.g. by bubbling | 2200/0626 | . . using levitated droplets |
| 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 | 2200/0631 | . . Purification arrangements, e.g. solid phase extraction [SPE] |
| 7/02 | . Water baths; Sand baths; Air baths | 2200/0636 | . . Focussing flows, e.g. to laminate flows |
| 7/04 | . Heat insulating devices, e.g. jackets for flasks | 2200/0642 | . . Filling fluids into wells by specific techniques |
| 7/50 | . {Cryostats} | 2200/0647 | . . Handling flowable solids, e.g. microscopic beads, cells, particles |
| 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)} | 2200/0652 | . . . Sorting or classification of particles or molecules |
| 7/525 | . . {with physical movement of samples between temperature zones} | 2200/0657 | . . . Pipetting powder |
| 7/5255 | . . . {by moving sample containers} | 2200/0663 | . . . Stretching or orienting elongated molecules or particles |
| 7/54 | . {using spatial temperature gradients} | 2200/0668 | . . . Trapping microscopic beads |
| 9/00 | Supporting devices; Holding devices (tweezers, tongs B25B) | 2200/0673 | . . Handling of plugs of fluid surrounded by immiscible fluid |
| 9/02 | . Laboratory benches or tables; Fittings therefor | 2200/0678 | . . Facilitating or initiating evaporation |
| 9/04 | . Retort stands; Retort clamps | 2200/0684 | . . Venting, avoiding backpressure, avoid gas bubbles |
| 9/06 | . Test-tube stands; Test-tube holders | 2200/0689 | . . Sealing |
| 9/065 | . . {specially adapted for capillary tubes} | 2200/0694 | . . Creating chemical gradients in a fluid |
| 9/50 | . {Clamping means, tongs (in general F16B 2/06)} | 2200/08 | . Ergonomic or safety aspects of handling devices |
| 9/52 | . {Supports for flat sample carrier, e.g. used for plates, slides, chips} | 2200/082 | . . Handling hazardous material |
| 9/523 | . . {for multisample carriers, e.g. used for microtitration plates} | 2200/085 | . . Protection against injuring the user |
| 9/527 | . . {for microfluidic devices, e.g. used for lab-on-a-chip} | 2200/087 | . . Ergonomic aspects |
| 9/54 | . {Supports related to pipettes and burettes} | 2200/10 | . Integrating sample preparation and analysis in single entity, e.g. lab-on-a-chip concept |
| 9/543 | . . {for disposable pipette tips, e.g. racks or cassettes} | 2200/12 | . Specific details about manufacturing devices |
| 9/547 | . . {for dispensing pins} | 2200/14 | . Process control and prevention of errors |
| 99/00 | Subject matter not provided for in other groups of this subclass {(chemical indicators in general G01N)} | 2200/141 | . . Preventing contamination, tampering |
| 2200/00 | Solutions for specific problems relating to chemical or physical laboratory apparatus | 2200/142 | . . Preventing evaporation |
| 2200/02 | . Adapting objects or devices to another | 2200/143 | . . Quality control, feedback systems |
| 2200/021 | . . Adjust spacings in an array of wells, pipettes or holders, format transfer between arrays of different size or geometry | 2200/145 | . . . Detecting door closure |
| 2200/022 | . . . Variable spacings | 2200/146 | . . . Employing pressure sensors |
| 2200/023 | . . adapted for different sizes of tubes, tips or container | 2200/147 | . . . Employing temperature sensors |
| 2200/025 | . . Align devices or objects to ensure defined positions relative to each other | 2200/148 | . . Specific details about calibrations |
| 2200/026 | . . Fluid interfacing between devices or objects, e.g. connectors, inlet details | 2200/16 | . Reagents, handling or storing thereof |
| 2200/027 | . . . for microfluidic devices | 2200/18 | . Transport of container or devices |
| 2200/028 | . . Modular arrangements | 2200/185 | . . Long distance transport, e.g. mailing |
| 2200/04 | . Exchange or ejection of cartridges, containers or reservoirs | 2300/00 | Additional constructional details |
| 2200/06 | . Fluid handling related problems | 2300/02 | . Identification, exchange or storage of information |
| | | 2300/021 | . . Identification, e.g. bar codes |
| | | 2300/022 | . . . Transponder chips |
| | | 2300/023 | . . Sending and receiving of information, e.g. using bluetooth |
| | | 2300/024 | . . Storing results with means integrated into the container |
| | | 2300/025 | . . Displaying results or values with integrated means |
| | | 2300/026 | . . . Drum counters |
| | | 2300/027 | . . . Digital display, e.g. LCD, LED |
| | | 2300/028 | . . . Graduation |
| | | 2300/04 | . Closures and closing means |
| | | 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 |

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| 2300/046 | . . Function or devices integrated in the closure | 2300/163 | . . . Biocompatibility |
| 2300/047 | . . . Additional chamber, reservoir | 2300/165 | . . . Specific details about hydrophobic, oleophobic surfaces |
| 2300/048 | . . . enabling gas exchange, e.g. vents | 2300/166 | Suprahydrophobic; Ultraphobic; Lotus-effect |
| 2300/049 | . . . Valves integrated in closure | 2300/168 | . . Specific optical properties, e.g. reflective coatings |
| 2300/06 | . Auxiliary integrated devices, integrated components | 2300/18 | . Means for temperature control |
| 2300/0609 | . . Holders integrated in container to position an object | 2300/1805 | . . Conductive heating, heat from thermostatted solids is conducted to receptacles, e.g. heating plates, blocks |
| 2300/0618 | . . . for removable separation walls | 2300/1811 | . . . using electromagnetic induction heating |
| 2300/0627 | . . Sensor or part of a sensor is integrated | 2300/1816 | . . . using induction heating |
| 2300/0636 | . . . Integrated biosensor, microarrays | 2300/1822 | . . . using Peltier elements |
| 2300/0645 | . . . Electrodes | 2300/1827 | . . . using resistive heater |
| 2300/0654 | . . . Lenses; Optical fibres | 2300/1833 | . . using electrical currents in the sample itself |
| 2300/0663 | . . . Whole sensors | 2300/1838 | . . using fluid heat transfer medium |
| 2300/0672 | . . Integrated piercing tool | 2300/1844 | . . . using fans |
| 2300/0681 | . . Filter | 2300/185 | . . . using a liquid as fluid |
| 2300/069 | . . Absorbents; Gels to retain a fluid | 2300/1855 | . . using phase changes in a medium |
| 2300/08 | . Geometry, shape and general structure | 2300/1861 | . . using radiation |
| 2300/0803 | . . Disc shape | 2300/1866 | . . . Microwaves |
| 2300/0806 | . . . Standardised forms, e.g. compact disc [CD] format | 2300/1872 | . . . Infrared light |
| 2300/0809 | . . rectangular shaped | 2300/1877 | . . using chemical reactions |
| 2300/0812 | . . . Bands; Tapes | 2300/1883 | . . using thermal insulation |
| 2300/0816 | . . . Cards, e.g. flat sample carriers usually with flow in two horizontal directions | 2300/1888 | . . Pipettes or dispensers with temperature control |
| 2300/0819 | . . . Microarrays; Biochips | 2300/1894 | . . Cooling means; Cryo cooling |
| 2300/0822 | . . . Slides | 2400/00 Moving or stopping fluids | |
| 2300/0825 | . . . Test strips | 2400/02 | . Drop detachment mechanisms of single droplets from nozzles or pins |
| 2300/0829 | . . . Multi-well plates; Microtitration plates | 2400/021 | . . non contact spotting by inertia, i.e. abrupt deceleration of the nozzle or pin |
| 2300/0832 | . . cylindrical, tube shaped | 2400/022 | . . droplet contacts the surface of the receptacle |
| 2300/0835 | . . . Ampoules | 2400/024 | . . . touch-off at the side wall of the receptacle |
| 2300/0838 | . . . Capillaries | 2400/025 | . . . tapping tip on substrate |
| 2300/0841 | . . . Drums | 2400/027 | . . electrostatic forces between substrate and tip |
| 2300/0845 | . . . Filaments, strings, fibres, i.e. not hollow | 2400/028 | . . Pin is moved through a ring which is filled with a fluid |
| 2300/0848 | . . Specific forms of parts of containers | 2400/04 | . Moving fluids with specific forces or mechanical means |
| 2300/0851 | . . . Bottom walls | 2400/0403 | . . specific forces |
| 2300/0854 | . . . Double walls | 2400/0406 | . . . capillary forces |
| 2300/0858 | . . . Side walls | 2400/0409 | . . . centrifugal forces |
| 2300/0861 | . . Configuration of multiple channels and/or chambers in a single devices | 2400/0412 | using additionally coriolis forces |
| 2300/0864 | . . . comprising only one inlet and multiple receiving wells, e.g. for separation, splitting | 2400/0415 | electrical forces, e.g. electrokinetic |
| 2300/0867 | . . . Multiple inlets and one sample wells, e.g. mixing, dilution | 2400/0418 | electro-osmotic flow [EOF] |
| 2300/087 | . . . Multiple sequential chambers | 2400/0421 | electrophoretic flow |
| 2300/0874 | . . . Three dimensional network | 2400/0424 | Dielectrophoretic forces |
| 2300/0877 | . . . Flow chambers | 2400/0427 | Electrowetting |
| 2300/088 | . . . Channel loops | 2400/043 | . . . magnetic forces |
| 2300/0883 | . . . Serpentine channels | 2400/0433 | . . . vibrational forces |
| 2300/0887 | . . Laminated structure | 2400/0436 | acoustic forces, e.g. surface acoustic waves [SAW] |
| 2300/089 | . . Virtual walls for guiding liquids | 2400/0439 | ultrasonic vibrations, vibrating piezo elements |
| 2300/0893 | . . having a very large number of wells, microfabricated wells | 2400/0442 | . . . thermal energy, e.g. vaporisation, bubble jet |
| 2300/0896 | . . Nano scaled | 2400/0445 | Natural or forced convection |
| 2300/10 | . Means to control humidity and/or other gases | 2400/0448 | Marangoni flow; Thermocapillary effect |
| 2300/105 | . . using desiccants | 2400/0451 | Thermophoresis; Thermodiffusion; Soret-effect |
| 2300/12 | . Specific details about materials | 2400/0454 | . . . radiation pressure, optical tweezers |
| 2300/123 | . . Flexible; Elastomeric | 2400/0457 | . . . passive flow or gravitation |
| 2300/126 | . . Paper | 2400/046 | . . . Chemical or electrochemical formation of bubbles |
| 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 | | |

- 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; Destructable 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