CPC COOPERATIVE PATENT CLASSIFICATION

B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

SEPARATING; MIXING

B01 PHYSICAL OR CHEMICAL PROCESSES OR APPARATUS IN GENERAL (furnaces, kilns, ovens, retorts in general F27)

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

1/00 **Enclosures; Chambers** (fume cupboards B08B; provided with manipulation devices, glove boxes B25J; cooling chambers F25D)

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 3/161)}

1/50 . {for storing hazardous materials in the laboratory, e.g. cupboards, waste containers}

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
3/14 . 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 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)
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 for flat sample carrier, e.g. used 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 related to pipettes and burettes}
9/543 . . {for disposable pipette tips, e.g. racks or cassettes}
9/547 . . {for dispensing pins}

99/00 **Subject matter not provided for in other groups of this subclass {**(chemical indicators in general G01N)**}**

2200/00 **Solutions for specific problems relating to chemical or physical laboratory apparatus**
2200/02 . Adapting objects or devices to another
2200/021 . . Adjust spacings in an array of wells, pipettes or holders, format transfer between arrays of different size or geometry
2200/022 . . . Variable spacings
2200/023 . . adapted for different sizes of tubes, tips or container
2200/025 . . Align devices or objects to ensure defined positions relative to each other
2200/026 . . Fluid interfacing between devices or objects, e.g. connectors, inlet details
2200/027 . . . for microfluidic devices
2200/028 . . Modular arrangements
2200/04 . Exchange or ejection of cartridges, containers or reservoirs
2200/06 . Fluid handling related problems
2200/0605 . . Metering of fluids
2200/061 . . Counting droplets
2200/0615 . . Loss of fluid by dripping
2200/0621 . . Control of the sequence of chambers filled or emptied
2200/0626 . . using levitated droplets
2200/0631 . . Purification arrangements, e.g. solid phase extraction [SPE]
2200/0636 . . Focussing flows, e.g. to laminate flows
2200/0642 . . Filling fluids into wells by specific techniques
2200/0647 . . Handling flowable solids, e.g. microscopic beads, cells, particles
2200/0652 . . . Sorting or classification of particles or molecules
2200/0657 . . . Pipetting powder
2200/0663 . . . Stretching or orienting elongated molecules or particles
2200/0668 . . . Trapping microscopic beads
2200/0673 . . Handling of plugs of fluid surrounded by immiscible fluid
2200/0678 . . Facilitating or initiating evaporation
2200/0684 . . Venting, avoiding backpressure, avoid gas bubbles
2200/0689 . . Sealing
2200/0694 . . Creating chemical gradients in a fluid
2200/08 . Ergonomic or safety aspects of handling devices
2200/082 . . Handling hazardous material
2200/085 . . Protection against injuring the user
2200/087 . . Ergonomic aspects
2200/10 . Integrating sample preparation and analysis in single entity, e.g. lab-on-a-chip concept
2200/12 . Specific details about manufacturing devices
2200/14 . Process control and prevention of errors
2200/141 . . Preventing contamination, tampering
2200/142 . . Preventing evaporation
2200/143 . . Quality control, feedback systems
2200/145 . . . Detecting door closure
2200/146 . . . Employing pressure sensors
2200/147 . . . Employing temperature sensors
2200/148 . . Specific details about calibrations
2200/16 . Reagents, handling or storing thereof
2200/18 . Transport of container or devices
2200/185 . . Long distance transport, e.g. mailing

2300/00 **Additional constructional details**

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
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

2400/00 Moving or stopping fluids
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