

Patent classifications and technology areas

When a patent corresponds to multiple technological fields, not only the first code of the International Patent Classification (IPC) indicated on the patent is taken into account but all of them.

High tech patents

Based on the data on patent applications by IPC subclass, Eurostat calculates data on patent applications in high technology fields. High tech patents are counted following the criteria established by the Trilateral Statistical Report, where the subsequent technical fields are defined as high technology: Computer and automated business equipment; micro-organism and genetic engineering; aviation; communications technology; semiconductors; lasers. The IPC sub-classes corresponding to the above high tech fields are listed in Table 1.

Table 1: IPC subclasses considered as high technology

IPC subclass	Definition	ICT group	
B41J	Typewriters; selective printing mechanisms, i.e. mechanisms printing otherwise than from a form; correction of typographical errors	Computer and automated business equipment	
G06C	Digital computers in which all the computation is effected mechanically		
G06D	Digit fluid-pressure computing devices		
G06E	Optical computing devices		
G11C 29/54	Arrangements for designing test circuits, e.g. design for test (DFT) tools		
G06Q 10/00	Administration, e.g. office automation or reservations; Management, e.g. resource or project management		
G06Q 30-99/00	Commerce, e.g. marketing, shopping, billing, auctions or e-commerce, Finance, e.g. banking, investment or tax processing; Insurance, e.g. risk analysis or pensions, Systems or methods specially adapted for a specific business sector, e.g. health care, utilities, tourism or legal services, Systems or methods specially adapted for administrative, commercial, financial, managerial, supervisory or forecasting purposes, not involving significant data processing, Subject matter not provided for in other groups of this subclass		
G06Q 20/00	Payment schemes, architectures or protocols		
G06G	Analogue computers		
G06J	Computer systems based on specific computational models		
G06F 3/01	Input arrangements or combined input and output arrangements for interaction between user and computer		
G06M	Static stores		
B64B	Lighter-than-air aircraft		Aviation
B64C	Aeroplanes; helicopters		
B64D	Equipment for fitting in or to aircraft; flying suits; parachutes; arrangements or mounting of power plants or propulsion transmissions		
B64F	Ground or aircraft-carrier-deck installations		
B64G	Cosmonautics; vehicles or equipment therefor		
C40B 10/00	Directed molecular evolution of macromolecules, e.g. RNA, DNA or proteins	Micro-organism and genetic engineering	
C40B 40/00-50/18	Libraries per se, e.g. arrays, mixtures, methods of creating libraries, e.g. combinatorial synthesis		
C12P	Fermentation or enzyme-using processes to synthesise a desired chemical compound or composition or to separate optical isomers from a racemic mixture		
C12Q	Measuring or testing processes involving enzymes or micro-organisms; compositions or test papers therefor; processes of preparing such compositions; condition-responsive control in microbiological or enzymological processes		
H01S	Devices using stimulation emission	Lasers	
H01L	Semiconductor devices; electric solid state devices not otherwise provided for	Semiconductors	
H04B	Transmission	Communication	

H04H	Broadcast communication	technology
H04J	Multiplex communication	
H04K	Secret communication; jamming of communication	
H04L	Transmission of digital information, e.g. telegraphic communication	
H04M	Telephonic communication	
H04N	Pictorial communication e.g. Television	
H04Q	Selecting	
H04R	Loudspeakers, microphones pick-ups or like acoustic eletromechanical transducers; deaf-aid sets; public address systems	
H04S	Stereophonic systems	

It should be noticed that, due to the fact that the OECD does not report on IPC subclass G06N separately, data on high tech patents granted by the USPTO exclude this class from the definition of high tech patents.

ICT (information & communication technology) sector

Based on the data on patent applications by IPC subclass, Eurostat calculates data on patent applications in ICT groups. There are four ICT groups: Telecommunications, Consumer electronics, Computers, office machinery and other ICT. The IPC sub-classes corresponding to the above ICT groups are listed in Table 2.

Table 2: IPC subclasses considered as information & communication technology sector

IPC subclass	Definition	ICT group	
G01C 11/36	Videogrammetry, i.e. electronic processing of video signals from different sources to give parallax or range information	Telecommu- nications	
G08C	Transmission systems for measured values, control or similar signals		
G09C	Ciphering or deciphering apparatus for cryptographic or other purposes involving the need for secrecy		
H01P	Waveguides; resonators, lines, or other devices of the waveguide type		
H01Q	Aerials		
H01S3/(025, 043, 063, 067, 085, 0933, 0941, 103, 133, 18, 19, 25)	Lasers, i.e. devices for generation, amplification, modulation, demodulation, or frequency-changing, using stimulated emission, of infra-red, visible, or ultra-violet waves (Structural details or components not essential to laser action, Cooling arrangements, Waveguide lasers, e.g. laser amplifiers, Fibre lasers, Construction or shape of the optical resonator, Processes or apparatus for excitation, using optical pumping of a semiconductor, e.g. light emitting diode, of a semiconductor laser, e.g. of a laser diode, Arrangements for controlling the laser output parameters, e.g. by operating on the active medium (transmission systems employing light, Stabilisation of laser output parameters, Structure or shape of the active region; Materials therefore comprising PN junctions, e.g. hetero- or double- hetero-structures, Arrangement of two or more semiconductor lasers)		
H01S5	Semi-conductor lasers		
H03B	Generation of oscillations, directly or by frequency-changing, by circuits employing active elements which operate in a non-switching manner; generation of noise by such circuits		
H03C	Modulation		
H03D	Demodulation for transference of modulation from one carrier to another		
H03H	Impedance networks, e.g. resonant circuits; resonators		
H03M	Coding, decoding or code conversion, in general		
H04B	Transmission		
H04J	Multiplex communication		
H04K	Secret communication; jamming of communication		
H04L	Transmission of digital information, e.g. telegraphic communication		
H04M	Telephonic communication		
H04Q	Selecting		
G11B	Information storage based on relative movement between record carrier and transducer		
H03F	Amplifiers		
H03G	Control of amplification		
H03J	Tuning resonant circuits, selecting resonant circuits		

H04H	Broadcast communication		
H04N	Pictorial communication, e.g. television		
H04R	Loudspeakers, microphones, gramophone, pick-ups or like acoustic electromechanical transducers; deaf-aid sets; public address systems		
H04S	Stereophonic systems		
B07C	Postal sorting, sorting individual articles, or bulk material fit to be sorted piece-mail, e.g. by picking		
B41J	Typewriters; selective printing mechanisms, i.e. mechanisms printing otherwise than from a form; correction of typographical errors		
B41K	Stamps; stamping or numbering apparatus or devices		
G02F	Devices or arrangements, the optical operation of which is modified by changing the optical properties of the medium of the devices or arrangements for the control of the intensity, colour, phase, polarisation or direction of light, e.g. switching, gating, modulating or demodulating; techniques or procedures for the operation thereof; frequency-changing; non-linear optics; optical logic elements; optical analogue/digital converters	Computers, office machinery	
G03G	Electrography; electrophotography; magnetography		
G05F	Systems for regulating electric or magnetic variables		
C40B 60/00 - 60/14	Apparatus specially adapted for use in combinatorial chemistry or with libraries		
G07	Checking-devices		
G09G	Arrangements or circuits for control of indicating devices using static means to present variable information		
G10L	Speech analysis or synthesis; speech recognition		
G11C	Static stores		
H03K	Tuning resonant circuits; selecting resonant circuits		
H03L	Automatic control, starting, synchronisation, or stabilisation of generators of electronic oscillations or pulses		
G01B	Measuring length, thickness, or similar linear dimensions; measuring angles; measuring areas; measuring irregularities of surfaces or contours		Other ICT
G01S 17/48	Active triangulation systems, i.e. using the transmission and reflection of electromagnetic waves other than radio waves		
G01D	Measuring not specially adapted for a specific variable; arrangements for measuring two or more variables not covered by a single other subclass; tariff metering apparatus; measuring or testing not otherwise provided for		
G01F	Measuring volume, volume flow, mass flow, or liquid level; metering by volume		
G01G	Weighing		
G01H	Measurement of mechanical vibrations or ultrasonic, sonic or infrasonic waves		
G01J	Measurement of intensity, velocity, spectral content, polarisation, phase or pulse, characteristics of infra-red, visible or ultra-violet light; colorimetry; radiation pyrometry		
G01K	Measuring temperature; measuring quantity of heat; thermally-sensitive elements not otherwise provided for		
G01L	Measuring force, stress, torque, work, mechanical power, mechanical efficiency, or fluid pressure		
G01M	Testing static or dynamic of machines or structures; testing structures or apparatus not otherwise provided for		
B01J 20/281 - 20/292	Sorbents specially adapted for preparative, analytical or investigative chromatography, porous sorbents, based on silica, based on alumina, based on polymers, phases chemically bonded to a substrate, e.g. to silica or to polymers, non-polar phases; Reversed phases, polar phases, bonded via a spacer, chiral phases, gel sorbents, liquid sorbents		
G01P	Measuring linear or angular speed, acceleration, deceleration, or shock; indicating presence, absence, or direction, of movement		
G01R	Measuring electric variables; measuring magnetic variables		
G01V	Geophysics; gravitational measurements; detecting masses or objects; tags		
G01W	Meteorology		
G02B6	Light guides; Structural details of arrangements comprising light guides and		

	other optical elements, e.g. couplings	Other ICT
G05B	Control or regulating systems in general; functional elements of such systems; monitoring or testing arrangements for such systems or elements	
G08G	Traffic control systems	
G09B	Educational or demonstration appliances; appliances for teaching, or communicating with, the blind, deaf or mute; models; planetaria; globes; maps; diagrams	
H01B11	Communication cables or conductors	
H01J (11/, 13/, 15/, 17/, 19/, 21/, 23/, 25/, 27/, 29/, 31/, 33/, 40/, 41/, 43/, 45/)	Electric discharge tubes or discharge lamps (Gas-filled discharge tubes without any main electrode inside the vessel; Gas-filled discharge tubes with at least one main electrode outside the vessel, Discharge tubes with liquid-pool cathodes, e.g. metal-vapour rectifying tubes, Gas-filled discharge tubes with gaseous cathodes, e.g. plasma cathode, Gas-filled discharge tubes with solid cathode, Details of vacuum tubes of the types covered by group, Vacuum tubes, Details of transit-time tubes of the types covered by group, Transit-time tubes, e.g. klystrons, travelling-wave tubes, magnetrons, Ion beam tubes, Details of cathode-ray tubes or of electron-beam tubes of the types covered by group, Cathode-ray tubes; Electron-beam tubes, Discharge tubes with provision for emergence of electrons or ions from the vessel, Photoelectric discharge tubes not involving the ionisation of a gas, Discharge tubes and means integral therewith for measuring gas pressure; Discharge tubes for evacuation by diffusion of ions, Secondary-emission tubes; Electron-multiplier tubes, Discharge tubes functioning as thermionic generators	
H01L	Semiconductor devices; electric solid state devices not otherwise provided for	

Biotechnology sector

Based on the data on patent applications by IPC subclass, Eurostat calculates data on patent applications in biotechnology. The IPC sub-classes used for the biotechnology sector are listed in Table 3.

Table 3: IPC subclasses considered as biotechnology sector

IPC codes	Definition
A01H 1/00	Processes for modifying genotypes
A01H 4/00	Plant reproduction by tissue culture techniques
A61K 38/00	Medicinal preparations containing peptides
A61K 39/00	Medicinal preparations containing antigens or antibodies
A61K 48/00	Medicinal preparations containing genetic material which is inserted into cells of the living body to treat genetic diseases; Gene therapy
C02F 3/34	Biological treatment of water, waste water, or sewage: characterised by the micro-organisms used
C40B 40/00 - 50/18	Libraries per se, e.g. arrays, mixtures, methods of creating libraries, e.g. combinatorial synthesis
C40B 70/00 - 80/00	Tags or labels specially adapted for combinatorial chemistry or libraries, e.g. fluorescent tags or bar codes, Linkers or spacers specially adapted for combinatorial chemistry or libraries, e.g. traceless linkers or safety-catch linkers
C40B 10/00	Directed molecular evolution of macromolecules, e.g. RNA, DNA or proteins
C12N	Micro-organisms or enzymes; compositions thereof propagating, preserving, or maintaining micro-organisms; mutation or genetic engineering; culture media
C12P	Fermentation or enzyme-using processes to synthesise a desired chemical compound or composition or to separate optical isomers from a racemic mixture
C12Q	Measuring or testing processes involving enzymes or micro-organisms; compositions or test papers therefor; processes of preparing such compositions; condition-responsive control in microbiological or enzymological processes

C12S	Processes using enzymes or micro-organisms to liberate, separate or purify a pre-existing compound or composition processes using enzymes or micro-organisms to treat textiles or to clean solid surfaces of materials
G01N 27/327	Investigating or analysing materials by the use of electric, electro-chemical, or magnetic means: biochemical electrodes
G01N 33/53*	Investigating or analysing materials by specific methods not covered by the preceding groups: immunoassay; biospecific binding assay; materials therefore
G01N 33/54*	Investigating or analysing materials by specific methods not covered by the preceding groups: double or second antibody: with steric inhibition or signal modification: with an insoluble carrier for immobilising immunochemicals: the carrier being organic: synthetic resin: as water suspendable particles: with antigen or antibody attached to the carrier via a bridging agent: Carbohydrates: with antigen or antibody entrapped within the carrier
G01N 33/55*	Investigating or analysing materials by specific methods not covered by the preceding groups: the carrier being inorganic: Glass or silica: Metal or metal coated: the carrier being a biological cell or cell fragment: Red blood cell: Fixed or stabilised red blood cell: using kinetic measurement: using diffusion or migration of antigen or antibody: through a gel
G01N 33/57*	Investigating or analysing materials by specific methods not covered by the preceding groups: for venereal disease: for enzymes or isoenzymes: for cancer: for hepatitis: involving monoclonal antibodies: involving limulus lysate
G01N 33/68	Investigating or analysing materials by specific methods not covered by the preceding groups: involving proteins, peptides or amino acids
G01N 33/74	Investigating or analysing materials by specific methods not covered by the preceding groups: involving hormones
G01N 33/76	Investigating or analysing materials by specific methods not covered by the preceding groups: human chorionic gonadotropin
G01N 33/78	Investigating or analysing materials by specific methods not covered by the preceding groups: thyroid gland hormones
G01N 33/88	Investigating or analysing materials by specific methods not covered by the preceding groups: involving prostaglandins
G01N 33/92	Investigating or analysing materials by specific methods not covered by the preceding groups: involving lipids, e.g. cholesterol

* Those IPC codes also include subgroups up to one digit (0 or 1 digit). For example, in addition to the code G01N 33/53, the codes G01N 33/531, G01N 33/532, etc. are included.

Codes put in bold are those that changed with the update to IPC 8th edition, version 1st January 2006.

Last update of this document: 11 June 2009