Clarivate

DWPI Classification

Derwent World Patents Index | Edition 16

Clarivate

Derwent World Patents Index (DWPI)

DWPI Classification

Edition 16

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Introduction

Clarivate: your first choice for global scientific and patent information

We combine authoritative information with innovative technologies to enhance our customers' ability to achieve world-class research and business results. Our databases assist professionals at every stage of research and development from discovery and analysis to product development and distribution.

Our flagship information and analysis resources include Derwent World Patents Index™, Derwent Innovation™, Web of Science™ and Cortellis™.

The world's top companies, research organizations and law firms trust our information because we provide a one-stop shop for quality information on powerful platforms, accompanied by intuitive analytical tools and backed up by dedicated support teams.

Our integrated solutions are used by researchers, information specialists and professionals in the fields of biotechnology, chemistry, engineering, healthcare, patent law, financial services, higher education, reference information, corporate training and assessment.

Our knowledge resources include:

- Value-added information from global patents
- Fast delivery of full-text documents, patent file histories and translations
- Multi-disciplinary information from scientific journal literature and the Web
- Links management and federated searching
- Comprehensive alerting and search services
- Detailed industry codes and standards
- Pharmaceutical market and competitive intelligence
- Global conference proceedings
- Versatile analytical and bibliographic management tools
- Customized patent and scientific workflow solutions

You can access our information through a variety of platforms as mentioned above, plus the online hosts: ProQuest Dialog and STN.

Value Added patent information

Patent information is a vast resource of technological, commercial and competitor intelligence, much of which is not published in other documents. By searching patent information effectively, you can monitor global technology developments, check that your own research is unique, keep track of your competitors and ensure that no-one is infringing your own patents.

However, the volume of patent data can be overwhelming. More than 5 million new inventions are published worldwide in patents each year, with a high proportion originating in the Asian region, particularly China.

We make global patent information easily accessible by writing concise abstracts that clearly highlight the nature of the invention, then publishing these in a single, English-Language database that can be searched precisely for specific technologies.

How Clarivate classifies and indexes patents

Companies often use different names for the same invention, and additional variation may be introduced when the patent application is translated into different languages. Also, some keywords can appear in many different contexts within patent titles e.g. 'valve' can be either electrical or mechanical. So a subject classification system is essential for effective patent searching.

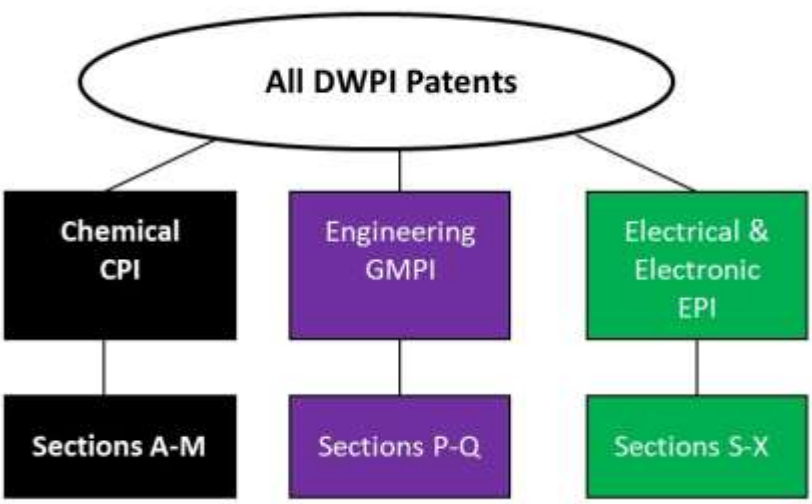
Clarivate categorizes patent documents using an easy-to-use **Derwent World Patents Index (DWPI)** classification system for all technologies. This unique system is consistently applied to all patents by Clarivate subject experts, enabling effective and precise searching in a particular area of technology.

The DWPI classification system

Patents are classified into three broad technology areas:

- Chemical
- Engineering
- Electrical and Electronic Engineering

The three technology areas are subdivided into sections which are further subdivided into classes.



Sections

Patents are divided into 21 broad subject areas or sections designated A-M (Chemical), P-Q (Engineering) and S-X (Electrical and Electronic Engineering).

Classes

The 21 sections are further subdivided into classes. Each class consists of one section letter followed by two digits e.g.

- C04 is the class of all Chemical fertilizers within Section C (Agricultural Chemicals).
- X22 is the class for Automotive Electrics within Section X (Electric Power Engineering).

When used in combination with other online search terms e.g. Keyword Search, these classes allow you to precisely and effectively restrict your search to the relevant subject areas e.g. the ambiguous word 'warn' can be combined with X22 (Automotive Electrics) to retrieve only those references to automotive warning devices.

DWPI cross-references entries to ensure that all patents of interest are retrieved when searching.

International Patent Classification (IPC)

The International Patent Classification (IPC) is an internationally-recognized classification system which is controlled by the World Intellectual Property Organisation (WIPO) and assigned to patent documents by Patent Offices. Further details are available on the WIPO web site at **http://www.wipo.int/classifications/en/**

All IPCs applied to a patent are included in the corresponding DWPI record in addition to the DWPI classes and manual codes assigned by Clarivate subject specialists. In this booklet, the detailed descriptions of each section show how DWPI classes relate to the equivalent IPCs.

Where possible we have indicated next to the Class the equivalent IPC in an abbreviated form (e.g. A47, F23-5). However, this should only be taken as a guide, since there are areas where the DWPI Classes are assigned intellectually by our subject experts and no strict correspondence is claimed.

Helping you to find the information you need

It should be noted that Patent Office classification schemes have been designed primarily to meet the needs of patent examiners and searchers concerned with Intellectual Property (IP) rights. As a result, patent office classifications may be only partially helpful for other searchers.

E.g. In the chemical field, inventions classified by IPC are grouped by their chemical structure, not by their use. As a result, pharmacologically-active compounds may be intermingled with stabilizers for polymers or with herbicides.

Another factor to be considered is that application of IPCs may vary between national Patent Offices for several reasons:

- Differences in national patent laws (e.g. with respect to non-obviousness) which will influence the finding needs of examiners and hence the classification policy of the patent office
- IPCs are not always consistently applied e.g. washing machines are sometimes classified under IPC A47L (Domestic Appliances) and sometimes under IPC D06F (Laundering)
- Frequently, not all of the relevant IPCs are applied.

The DWPI Classification system does not have these limitations because:

- DWPI classes are consistently applied by our subject specialists according to a standard set of rules, irrespective of the patent origin
- DWPI records emphasise both the Novelty and Use of an invention. Patent Offices are obliged by IPC convention to classify the inventive step information, with any additional information classified at their discretion
- Clarivate subject specialists pay particular attention to ensure that borderline patents are included in the correct sections. E.g. a patent relating to a new organic chemical may be classified under IPC C07C (Organic Chemistry). However, if this new chemical can be used as a pharmaceutical intermediate, the DWPI Classification system will ensure that it is included in Section B (Pharmaceuticals).

DWPI patent families

DWPI's patent families bring together every patent relating to a single invention in one record, providing you with valuable information about the life of the invention.

DWPI assembles information describing a patent family, starting with the new invention (Basic patent) and adding information about patents for the same invention issued in other countries (Equivalents). Equivalent patent documents are regarded as falling within the same Classification Sections as the basic document which DWPI first classifies, except in the Engineering Sections when it may be revised if the IPC changes.

DWPI is unique in that our patent families include non-convention patents which are not readily identifiable in other patent databases.

As national patent offices may apply IPCs in different ways, the same invention patented in several of countries can have different IPCs. The DWPI patent family structure solves this problem by assigning the most appropriate class(es) to the Basic patent, after which all other members of the family (the Equivalents) automatically take the same course.

The only exception applies to Engineering patents where the classes applied to the Equivalent patent may be revised if the IPCs change.

Maximise your search potential with DWPI classes

Using DWPI classes in combination with other online search terms e.g. keyword search, gives you a simple and effective way to restrict your search to a specific subject area within a specific class.

E.g. by searching Class X22 alone, you can find patents relating to all aspects of Automotive Electrics. Using the word "warn" in a keyword search, you can find patents relating to a variety of warning devices, from personal security alarms to vehicle warning lights but by combining Class X22 and the word "warn", you can restrict your search to patents which relate to automotive warning devices only.

DWPI cross-classifies entries to ensure that all patents of interest are retrieved when searching e.g. a patent about preparation of magnetic recording media for use in video tapes could be assigned to both of the following classes ;

- Chemical class **L03 Electro-(in)organic** (Section L: Refractories, Ceramics, Cements and Electro(in)organics) and;
- Electrical & Electronic class **T03 Data Recording** (Section T: Computing and Control).

Chemical Sections

Chemical patents currently covered by DWPI are selected for inclusion in one or more of the following 12 sections.

All patents with the IPCs A01N, A21-A23, A61K, B01, B29, C, D, G21 are guaranteed to be included in the Chemical Patents section.

A Polymers; Plastics
B Pharmaceuticals
C Agricultural Chemicals
D Food, Fermentation, Disinfectants, Detergents
E General Chemicals
F Textiles, Paper, Cellulose
G Printing, Coating, Photographic
H Petroleum
J Chemical Engineering
K Nucleonics, Explosives, Protection
L Glass, Ceramics, Electro(in)organics
M Metallurgy

Classes

The 12 Sections A-M are broken down into 138 well-defined Classes which are primarily intended to break down the subject matter, simply and unambiguously, to obtain greater search precision. Classification covers the complete patent document taking into account all claims, particularly references to the use of chemicals or polymers, even when the main subject matter is non-chemical.

Where a patent specification falls logically into more than one section of the Chemical Classification it will be included in each of those Sections.

Thus, a patent involving a new dyestuff for polymeric fibers will be included in the appropriate classes of Sections A, E and F.

A: Polymers; Plastics

Patents that include the following features are selected for inclusion:

Polymers: Synthetic polymers. Selected natural polymers e.g. rubbers. Modified natural polymers. Polymerisation equipment and polymer work-up.

Fabrication: All processes and equipment for fabricating polymers including extrusion, injection moulding and slush moulding. The production, treatment and use of film, sheet and pipe.

Monomers: All patents relating to the production and purification of usefully polymerisable monomers, either known or shown clearly in the specification. Monomers are additionally covered in Section E.

Additives: Preparation and use of polymerisation catalysts. To be used in polymer processes. Stabilisers, surface active agents, plasticisers, slip agents, antistatic agents etc for use with polymers.

Uses: Wherever specific synthetic polymers or families of polymers are claimed or the specification is clearly concerned with them. Wherever novelty resides in the use of polymers. When the polymer is not specified or can be a range of alternative materials for an application, it is not included. Thus the use of rubber (undefined) components for a common application would not be automatically included.

Note: In 1972 there was a major revision of the Section A classes: for a full listing of the pre-1972 classes see Appendix 1.

A1 Addition and Natural Polymers

A11 Polysaccharides; natural rubber; other natural polymers (only a restricted range of modified)
Natural polymers are included. Thus, starch would be excluded but chemically modified starch included.

A12 Polymers of di-and higher olefins; acetylenics; nitroso compounds

A13 Polymers of aromatic mono-olefins; including polystyrene

A14 Polymers of other substituted monoolefins; including PVC, PTFE

A17 Polymers of unsubstituted aliphatic monoolefins; including polyethylene

A18 Addition polymers in general

A2 Condensation Polymers

A21 Epoxides; aminoplasts; phenoplasts

A23 Polyamides; polyesters. (including polycarbonates, polyesteramides); alkyds; other unsaturated polymers

A25 Polyurethanes; polyethers

A26 Other condensation polymers
Including silicone polymers and polymides (mineral silicates and similar materials would not usually appear in Section A).

A28 Condensation polymers in general

A3 Processing: General Additives and Applications

A31 Preliminary processes

A32 Polymer fabrication
Includes moulding, extrusion, forming, laminating, spinning.

A35 Other processing and general
Including vulcanisation, welding of plastics and adhesive processes. Testing.

A41 Monomers and Condensants
These are also included in Section E.

A60 Additives and Compounding Agents
If the usage is very restricted, it may be classified under the individual polymer or process involved.

A8/9 Applications

A81 Adhesives and binders
Including chipboard.

A82 Coatings, impregnations, polishes
Excluding textile finishing.

A83 Clothing, footwear

A84 Household and office fittings
Including carpets and carbon paper.

A85 Electrical applications

A86 Fancy goods, games, sports, toys

A87 Textile auxiliaries

A88 Mechanical engineering and tools
Including valves, gears and conveyor belts.

A89 Photographic, laboratory equipment, optical
Including electrophotographic, thermographic uses.

A91 Ion-exchange resins, polyelectrolytes

A92 Packaging and containers
Including ropes and nets.

A93 Roads, building, construction flooring

A94 Semi-finished materials -fibers, films, foams

A95 Transport
Including vehicle parts, tyres and armaments.

A96 Medical, dental, veterinary, cosmetic

A97 Miscellaneous goods not specified elsewhere
Including papermaking, gramophone records, detergents, food and oil-well applications.

B: Pharmaceuticals

All patents stated to be of pharmaceutical or veterinary interest, and also those relating to compounds for use as intermediates in the manufacture of pharmaceutical or veterinary products. Compositions used for diagnosis and analysis in the pharmaceutical and veterinary fields (e.g. stains for bacterial pathogens) are also included.

Artificial sweeteners, chemical warfare agents and plaque disclosing compositions are also included.

Patents dealing with the production of tablets, pills, capsules, suppositories etc. are included, as are devices for dispensing pharmaceuticals e.g. syringes, child-proof closures, calendar pill boxes, aerosols etc.

For each compound where more than one of the classifications given below could be assigned, then the order of priority is B01 before B02, B02 before B03.

B01 Steroids
Including systems containing carbocyclic and/or heterocyclic rings fused onto the basic steroidal ring structure.

B02 Fused ring heterocyclics

B03 Other heterocyclics

B04 Natural products and polymers
Including testing of body fluids (other than blood typing or cell counting), pharmaceuticals or veterinary compounds of unknown structure, testing of microorganisms for pathogenicity, testing of chemicals for mutagenicity or human toxicity and fermentative production of DNA or RNA. General compositions.

B05 Other organics
Aromatics, aliphatic, organo-metallics, compounds whose substituents vary such that they would be classified in several of B01-B05.

B06 Inorganics
Including fluorides for toothpastes etc.

B07 General
Tablets, dispensers, catheters (excluding drainage and angioplasty), encapsulation etc, but not systems for administration of blood or saline or IV feeding etc.

C: Agricultural Chemicals

Patents covering compounds of agricultural and veterinary interest are included:

Pest growth control agents: Insecticides, miticides, rodenticides, molluscicides, slugicides, vermicides (nematocides, anthelmintics, etc.) soil fumigants, pest repellents and attractants. Biological control; microorganisms, predators and natural products.

Plant growth control agents: Herbicides, weedicides, defoliants, desiccants, fruit drop and set controllers, rooting compounds, sprouting inhibitors, growth stimulants and retardants, moss and lichen controllers. Plant genetics.

Plant disease control agents: Fungicides, virucides, timber preservatives and bactericides.

Soil improvement agents: Fertilisers, trace metal additives, bacterial action control stimulants and soil consolidation agents if for agricultural purposes.

Veterinary products: Disease control agents, nutritional agents, and veterinary vaccines.

For each compound where more than one of the classifications given below could be assigned, then the order of priority is C01 before C02 and C02 before C03.

Note: Classes C05, C06 and C07 were added at the start of 1992.

C01 Organophosphorus; organometallic
I.e. compounds containing other than H, C, N, O, S and halogen.

C02 Heterocyclic

C03 Other organic compounds, inorganic compounds and multicomponent mixtures. Polymers and proteins Excluding non-native proteins (see C06).

C04 Fertilisers
Including urea and phosphoric acid production. Also soil modifiers and plant growth media. Chemical aspects of compost production.

C05 Biological control
Excluding veterinary medicine, but including use of microorganisms, predators and natural products.

C06 Biotechnology
Including plant genetics, veterinary vaccines, biotech testing, non-native proteins, modified micro-organisms, hybrid plants. Also includes veterinary testing using bio-technology methods.

C07 Apparatus, formulation, general
Including veterinary syringes, general formulations where the active compound is not central to the invention (e.g. wettable powders) and analysis not covered in C06.

D: Food, Fermentation, Disinfectants, Detergents

The food Classes include all commercial food machinery, processes and products. Domestic apparatus, operations which would be performed on the farm or plantation prior to arrival at the food factory and packaging are excluded.

Approximate IPCs are given in brackets.

D1 Food and Fermentation

D11 Baking
Including bakery products, flour, doughs, bakery ovens, dough transporting and/or handling equipment, pies and pasta, but not flour milling.
(A21)

D12 Butchering, meat treatment, processing poultry or fish
(A22)

D13 Other foodstuffs and treatment
Including preservation of food, milk, milk products, butter substitutes, edible oils and fats, non-alcoholic beverages, artificial sweeteners, food additives and animal feed.
(A23B-L)

D14 General foodstuffs machinery
Excluding machines which can be classified in D11-D13.
(A23N, P)

D15 Chemical or biological treatment of water, industrial waste and sewage
Including purification, sterilising or testing water, scale prevention, treatment of sewage sludge, regeneration of active carbon which has been used for water treatment and impregnating water with gas e.g. CO_2, but excluding plant and anti-pollution devices.
(C02)

D16 Fermentation industry
Including fermentation equipment, brewing,yeast production, production of pharmaceuticals and other chemicals by fermentation, microbiology, production of vaccines and antibodies, cell and tissue culture and genetic engineering.

D17 Sugar and starch industry
(C07H, C13)

D18 Skins, hides, pelts, leather and chemical treatment of tobacco

D2 Cosmetics, Disinfectants and Detergents

D21 Preparations for dental or toilet purposes
Including filling alloys, compositions for dentures or dental impressions, anti-caries chewing gum, plaque disclosing compositions, toothpastes, cosmetics, shampoos, topical anti-sunburn compositions and toilet soaps.
(A61K)

D22 Sterilising, bandages, dressing and skin protection agents
Including sterilising agents (other than for food), sutures, plaster casts, bioactive prostheses, contact lenses, diapers, animal litter, timber, preservatives, disinfectants, bactericidal detergents, deodorants, insect repellent compounds, moth proofers, sheep dip.
(A61L)

D23 Oils, fats and waxes
Including fatty acids, essential oils, but excluding butter (substitutes) and montan wax.
(*C11B, C)*

D24 Soap
Limited to metal salts of fatty acids which are used for cleaning.
(C11D)

D25 Detergents - other than soap and used for cleaning
(C11D)

E: General Chemicals

Patents concerning the production, purification, use, detection, removal or phase changes of nonpolymeric chemical compounds, and apparatus or novel catalysts for- producing them, are classified in Section E.

Exceptions to this are:

• Compounds stated to be solely for use as a pharmaceutical, veterinary medicament, fertiliser, herbicide or pesticide which are classified only in Sections B and/or C. However, where an additional use is stated, e.g. the compound is also a dyestuff intermediate, the patent is classified in Sections B and/or C and E.

• Monomers taking part in a polymerisation reaction and starting materials fm a chemical reaction are not classified in Section E, unless the patent is also concerned with the production or purification of the monomer/starting material.

• Polymerisation catalysts are not normally classified in Section E, unless the novelty of the invention is the catalyst and it is a single compound.

• Mixtures of compounds described as a cut in petrochemical process are normally classified in Section H only.

• Highly complex non-stoichiometric compounds, e.g. those used as fluorescent materials are classified in Section L only, but simpler compounds are normally classified also in Section E.

Growth of single crystals of pure elements or compounds e.g. Si, GaAs, BN is classified in both of Sections E and L.

Where necessary, a patent is classified in Section E for the compound and other Section(s) for its use(s) etc.
Typically, perfumes, flavourings and additives to foods and tobacco are normally classified in Sections D and E. Solvents and very common reagents such as water are not normally classified in Section E.

For each compound, when more than one of the classifications below could be assigned then the priority is E11 before E12 and E12 before E13.

E1 General Organic

E11 Containing P and/or Si

E12 Organometallics
i.e. containing other than H, C, N, O, S, halogens, Si and P.

E13 Heterocyclics

E14 Aromatics
i.e. containing at least one benzene ring.

E15 Alicyclics

E16 Aliphatics containing N and/or halogen

E17 Other aliphatics

E18 General hydrocarbon mixtures

E19 Other organic compounds general
Organic compounds of unknown or indefinite structure; general mixtures of many types; organic reactions (e.g. nitration, resolution) when applied generally.

E2 Dyestuffs

E21 Azo - including diazonium compounds

E22 Anthracene
Including those containing more than 3 rings.

E23 Heterocyclic

E24 Other dyes, all precursors

E3 General Inorganic

E31 Compounds of V, Nb, Ta, Cr, Mo, W, Mn, Tc, Re, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Pa, U and subsequent actinides

E32 Compounds of Ti, Zr, Hf, Cu, Ag, Au, Zn, Cd, Hg, Ga, In, Te, Ge, Sn, Pb, As, Sb, Bi

E33 Compounds of Be, Mg, Ca, Sr, Ba, Ra, Sc, Y, La, Ac, Al, lanthanides (rare earths), Th

E34 Compounds of Li, Na, K, Rb, Cs, Fr

E35 Ammonia, cyanogen and their compounds - including HCN and cyanamide, but not hydrazine

E36 Non-metallic elements, semi-metals (Se, Te, B, Si) and their compounds (except for E35)

E37 Mixtures of many components; inorganic reactions and processes of general applicability

F: Textiles, Paper, Cellulose

Patents classified in this section include all aspects of clothing, and all aspects of textile machinery.

Non-textile fiber handling processes are excluded e.g. processes for fiber-reinforced polymer production are classified only in Section A.

Approximate IPCs are given in brackets.

F01 Threads and fibers - natural or artificial; spinning
Including the production of mineral and carbon fibers.
(D01)

F02 Yarns
Mechanical finishing of yarns or ropes; warping or beaming.
(D02, D07)

F03 Weaving
Including finished products.
(D03)

F04 Braiding, knitting
Including trimmings and non-woven fabrics.
(D04)

F05 Sewing, embroidering, tufting
Including finished products.
(D05)

F06 Chemical type treatment of textiles
(D06B, L, M, P, Q)

F07 Other textile applications
Includes mechanical treatment of fabrics.
(D06C, F, C, H, J, L, M)

F08 Flexible sheet materials
Consisting of polymer-coated fibrous web, including end products not classified in other sections.
(D06N)

F09 Paper-making production of cellulose, chemical treatment of wood
Including chipboard and fiber-board.
(D21)

G: Printing, Coating, Photographic

Specifications with no chemical interest are not included. Thus, printing machines, photographic film processing apparatus and adhesive applicators are excluded.

Adhesive processes in the production of specific goods are excluded, unless the novelty lies in the adhesive material.

Normally excluded from Section G are polymeric coatings produced by hot melt extrusion e.g. cable coatings (Section A), metallic coatings (Section M) and vitreous enamel coatings (Section L).

Fillers for specific materials are usually classified under the related material section e.g. Section A, and are excluded from Section G.

Approximate IPCs are given in brackets.

G01 Inorganic pigments and non-fibrous fillers
(C09C)

G02 Inks, paints, polishes
Polymer-based paints and inks are also classified in
Section A.
(C09D, F, G)

G03 Adhesives
Excluding dispensers. Polymeric adhesives are also classified in Section A.
(C09H, J)

G04 Miscellaneous compositions
Including luminescent and tenebrescent materials, de-icing/de-misting compositions, mastics, heat transfer compositions and aerosol-can filling mixtures.
(C09H)

G05 Printing materials and processes
(B41, M, N)

G06 Photosensitive compositions and bases;
photographic processes
Includes photoresist coatings.
(G03C)

G07 Photo-mechanical production of printing surfaces
(G03F)

G08 Electrography, electrophotography and magnetography
(G03G)

H: Petroleum

Comprehensive coverage of all aspects of the oil and gas industry with limited coverage of competitive products e.g. coal and peat.

Approximate IPCs are given in brackets

H01 Obtaining crude oil and natural gas
Including exploration, drilling, well completion, production and treatment. General off-shore platform and drilling technology is included together with the treatment of tar sands and oil shales.
(C10G, E21B)

H02 Unit operations
Including distillation, sorption and solvent extraction.
(C10G)

H03 Transportation and storage
Only large-scale systems are included. Road tankers and retail petrol station-type applications are excluded. Treatment of pollution from marine oil tankers is included.

H04 Petroleum processing
Including treating, cracking, reforming, gasoline preparation - biosynthesis based on hydrocarbon feedstocks is included.
(C10G)

H05 Refinery engineering

H06 Gaseous and liquid fuels
Including pollution control. Chemical aspects of catalytic exhaust systems for cars are included as well as liquid or gaseous fuels of non-petroleum origin e.g. methanol or ethanol-based fuels. Combustion improvement additives for liquid fuels are included.
(C10L)

H07 Lubricants and lubrication
Excludes self-lubricating surfaces e.g. PTFE-coated surfaces and lubrication systems in general. Includes lubricants of non-petroleum origin e.g. silicone oils.
(C10M)

H08 Petroleum products other than fuels and lubricants
Includes hydraulic fluids and electrical oils even when of non-petroleum origin.
(C10M)

H09 Fuel products not of petroleum origin

Excluding coal handling, preparation or mining, but including coking, briquetting, peat processing synthesis, gas production, coal gasification. Combustion improvement additives for coal, peat and other non-hydrocarbon-based fuels are included in this class together with coal liquefaction and desulphurisation.

J: Chemical Engineering

Unit processes and/or plant for general application in chemical industries are included in this section, but processes and apparatus for specific applications are excluded.

Approximate IPCs are given in brackets.

J01 Separation
Including evaporation, crystallisation, solvent extraction, chromatography, dialysis, osmosis including drying gases and/or vapours and separation of solids from gases, liquids and other solids. Isotope separation, filter materials (including molecular sieves for separation), and centrifuges (except where used for analysis).
(B01D, B03, B04, B07B)

J02 Mixing and including dispersing
(B01F)

J03 Electrochemical processes and electrophoresis
Including ozone production, brine electrolysis, water electrolysis, production of chemical compounds and
non-metallic elements, but excluding batteries or other means of producing power and the treatment of metals.
(C25B)

J04 Chemical/physical processes/apparatus - including catalysis, catalysts
Excluding specific e.g. enzymatic or polymerisation catalysts. Includes colloid chemistry, laboratory apparatus and methods, testing, controlling, general encapsulation, detection and sampling (excluding clinical testing).
(B01J, L)

J05 Boiling and boiling apparatus
Including generation of steam unless for power plant.
(B01B)

J06 Storing or distributing gases or liquids
Including gas holders, vessels for gases, decantation and vaporisation of gases, pipelines and pipe systems, but excluding those for hydrocarbon gases or liquids and laying of pipelines.
(F17)

J07 Refrigeration, ice, gas liquefaction/solidification
Including machines, freezing of (semi)liquids, gas separation/liquefaction by cooling or pressure, fractionation of air
(F25)

J08 Heat transfer and drying
Including direct/indirect heat exchangers, heat transfer apparatus, drying processes
(F26, F28)

J09 Furnaces, kilns, ovens, retorts
Including furnace constructional details and accessories, but only where of general application
(F27)

K: Nucleonics, Explosives, Protection

All aspects of the nuclear industry, chemical aspects of fire-fighting, explosives and warfare agents.

Approximate IPCs are given in brackets.

K01 Fire fighting, fire-extinguishing compositions
Excluding fire engines, sprinkler systems, hose reels and protective clothing.
(A62D with K2)

K02 Protection against chemical warfare; breathing apparatus
Chemical aspects only.
(A62D with K1)

K03 Explosive charges; ammunition, fuses, blasting
Including only complete devices, except missile systems.
(F42)

K04 Explosives, matches
Including detonators, chemical lighters, pyrophoric compositions, fireworks, distress signals, chemical lasers, smoke generation, gas attack compositions, generation of gas for blasting or propulsion: but only their chemical aspects.
(C06)

K05 Nuclear reactors and simulators
Including reactor processes, components and accessories, but excluding power plant.
(G21B, C)

K06 Nuclear power plant
Including reprocessing used nuclear fuel.
(G21D)

K07 Health physics
Including radiation protection (other than against sunlight), monitoring devices, decontamination, radioactive waste disposal and protective clothing.
(G21F)

K08 Nucleonics; X-ray techniques
Including conversion of chemical elements, nuclear explosives and plasma techniques other than electron beam or plasma welding methods and apparatus and X-ray films.
(G01T, G21G, H, J, K, H05G, H)

L: Glass, Ceramics, Electro(in)organics

Comprehensive coverage of glass and ceramic compositions combined with chemical aspects of electronic devices and optical fibers.

Approximate IPCs are given in brackets.

L01 Glass

Includes chemical compositions, batch treatment, furnaces, flat glass forming, hollow-ware forming, post forming and glass/ceramics, but not lens designs, bottling, bottle-washing, closures for containers, glazing designs, glass cutting, chamfering edges, printing on glass, disposing of used glass or the production of pure sodium silicate. Chemical aspects of optical fibers.
(C03)

L02 Refractories, ceramics, cement

Includes manufacturing methods, limes, soil preparation for (road) building, magnesias and slags, cements, mortars, concretes, abrasives, thermal or acoustic insulation (non)oxide ceramics and ceramic composites, but not brick making, concrete mixers or casting or potters' wheels.
(C04)

L03 Electro-(in)organic

Includes chemical features of conductors, resistors, magnets, capacitors and switches, electric discharge lamps, semiconductor and other materials, batteries, accumulators and thermoelectric devices, including fuel cells, magnetic recording media, radiation emission devices, liquid crystals and basic electric elements.
Growing of single crystals of semiconductors and their doping are included, but semiconductor devices where the manufacture is not claimed are excluded.
Electrography, electrophotography, magnetography, electrolysis, electrophoresis, power plant, X-ray and plasma-techniques, ion exchange resins, polyelectrolytes, electroplating, metal electrodeposition, electroforming, anodising, electrolytic cleaning, cathodic protection and electrolytic or electrothermic production or refining of metals are all covered elsewhere.
(Sections G, J, K and M)

M: Metallurgy

Chemical aspects of metal production, working and finishing including welding and brazing.

Approximate IPCs are given in brackets.

M1 Metal Finishing

M11 Electroplating; electrolytic treatment of or with metals
Including electro-deposition of metals, electro-plating apparatus, electro-forming, electro-erosion, spark erosion, anodising (electrophoretically) coating metals and electrolytic cleaning and polishing.
(C25)

M12 Chemical cleaning and degreasing
Including cleaning and pickling.

M13 Coating material with metals, diffusion processes, enamelling and vitreous coatings
Including coating from liquid metal or solution, spraying, cementation, cathodic sputtering, enamelling and oil-free lubricant coatings, but not coatings for the production of semiconductors.
(C23C, D)

M14 Other chemical surface treatments
Including etching, brightening, forming non-metallic layers, passivation, cathodic protection and corrosion inhibitors, but not processes specifically for semiconductor production. This class also covers multistage processes.
(*C23F, C25)*

M2 Metals

M21 Metal rolling and forming
(B21)

M22 Casting; powder metallurgy
Including foundry moulding, moulding machines, patterns, moulds, cores and metal casting.
(B22)

M23 Soldering; welding
Including brazing, flame cutting and scarfing, cutting and welding rods, soldering and unsoldering apparatus and solder compositions.
(*B23K)*

M24 Metallurgy of iron and steel
Including manufacture and processing, treatment of steel melts and changing the physical properties of iron and steel, control/testing methods, blast furnaces and converters, and metallurgical coking processes.
(C10B, C21)

M25 Production and refining of metals other than iron
Including ore treatment, extraction, working up scrap, obtaining specific metals, control testing methods.
(*C22B)*

M26 Non-ferrous alloys
Including alloy production and composition.
(C22C)

M27 Ferrous alloys
Including alloy production and composition.
(C22C)

M28 Electrolytic and electrothermic production and refining of non-ferrous metals
Excluding heat treatment.
(C25)

M29 Changing the physical structure of non-ferrous metals and alloys
Including tempering, annealing, work-hardening and recrystallising.
(C22F)

Engineering Sections

Engineering patents currently covered by DWPI are selected for inclusion in one or more of the following 15 sections based upon the International Patents Classification (IPC) shown in brackets, or in the case of mechanical transportation-related patents from 200601, intellectually based on the technical content as disclosed in the basic patent specification.

Classes (Mechanical - P & Q)

These 15 Sections are broken down into 103 Sub-Classes to narrow the subject matter into more detailed profiles for greater precision. From 201501, manual code hierarchies have been added for all 15 P & Q classes to further subdivide them.

Classification is made primarily based on the IPCs assigned to the specification or, where not present (as for the Research Disclosure items), on the basis of DWPI-assigned IPCs.

IPCs (Mechanical - P & Q)

Where a patent falls into more than one of the P or Q Sections, it will be placed in each. Engineering patents may also occur in one or more of the Chemical Sections (A-M) or Electrical and Electronic Sections (S-X).

Unlike the Chemical Classification, an equivalent may introduce a new P or Q Class (which is then added to the master record), if an IPC which is outside the range of those covered by the Classes already assigned to the patent family has been applied to the equivalent.

Classes (Electrical - S to X)

These 6 Sections are broken down into 50 Classes. These Classes are DWPI-assigned according to the technical content as disclosed in the basic specification and take into account all the claims, particularly references to electrical applications, even when the main subject matter is chemical or mechanical in nature.

Where any patent specification falls logically into more than one Section of the Electrical & Electronic Classification it will be included in each of these Sections. Thus, a patent involving a TV receiver line output transformer will be included in Classes V02 (Inductors and Transformers) and W03 (TV and Broadcast Radio Receivers).

Classes are not intended to serve as an indexing or retrieval tool, but to break down the subject matter simply and unambiguously into a number of profiles for greater precision.

Basic documents are selected for inclusion in the Electrical & Electronic Classification based mainly on their relevance to electronic and electrical industries. For example, documents bearing the following IPCs are normally included:

A61N, B60L, B60M, G01, G02F, G03G, G04, G05 (not G05G), G06, G07, G08, G09G, G10H, G11, G12, G16, G21B and all IPC H.

In addition, we manually select from all other basics and include those of relevance to the electrical/electronic industries irrespective of assigned IPC.

All equivalents are regarded as falling within the same classes of Sections S-X as the parent document.

Approximate IPCs are given in brackets.

P: General

Human necessities, performing operations.
All IPC A, excluding A01N, A21, A23, A61K.
All IPC B02-B44, excluding B29.
All IPC G02, G03, G09, G10.

P1 AGRICULTURE, FOOD, TOBACCO

P11 Soil working, planting
(A01B, C)

P12 Harvesting
(A01D, F)

P13 Plant culture, dairy products
(A01G, H, J)

P14 Animal management and care
(A01K, L, M)

P15 Tobacco
(A24)

P2 PERSONAL, DOMESTIC

P21 Wearing apparel
(A41, A42)

P22 Footwear
(A43)

P23 Haberdashery and jewellery
(A44).

P24 Hand and travelling articles, brushes
(A45, A46)

P25 Office and home furniture
(A47B)

P26 Chairs, sofas and beds
(A47C D)

P27 Shops and household furnishings
Covers upholstery from 201201 (Q39 prior to 2012).
(A47F, C, H, B68F, G)

P28 Kitchen and sanitary equipment
(A47J, K, L)

P3 HEALTH, AMUSEMENT

P31 Diagnosis, surgery
(A61B)

P32 Dentistry, bandages, veterinary, prosthesis
(A61C, D, F)

P33 Medical aids, oral administration
(A6JG, H, J)

P34 Sterilising, syringes
(A61L, M, N)

P35 Lifesaving, safety, firefighting, fire extinguishing and fire prevention
(A62)

P36 Sports, games, toys, amusements
Covers saddlery from 201201 (Q39 prior to 2012).
(A63, B68B, C)

P4 SEPARATING, MIXING

P41 Crushing, centrifuging, separating solids, sorting
From 2015 this class includes separation of solids and sorting, previously covered in P43.
(B02, B03, B04, B07)

P42 Spraying, atomizing, coating, surface treatment and liquid application
(B05)

P43 Generating and using mechanical vibrations, cleaning, waste disposal
Prior to 2015 this class included separation of solids and sorting, now covered in P41.
(B06, B08, B09)

P5 SHAPING METAL

P51 Metal rolling, drawing, extruding
(B21B, C)

P52 Metal punching, working and forging
(B21F, G, J, K, L)

P53 Metal casting, powder metallurgy
(B22)

P54 Metal milling and other machining
(B23B-H)

P55 Welding and Soldering
(B23K)

P56 Machine Tools; Post-treatment for metal working
(B23P, Q)

P6 SHAPING NON-METALS

P61 Grinding and polishing of non-metals
(B24)

P62 Hand tools, cutting
(B25, B26)

P63 Working, preserving wood
(B27)

P64 Working cement, clay, stone
(B28)

P7 PRESSING, PRINTING

P71 Presses
(B30)

P72 Working paper
(B31)

P73 Layered products
(B32)

P74 Printing and lining machines
(B41B-G)

P75 Typewriters, stamps, duplicators
(B41J, N)

P76 Books, special printed matter
(B42)

P77 Writing, drawing appliances, bureau/desk accessories
(B43)

P78 Decorative art
(B44}

P8 OPTICS, PHOTOGRAPHY, GENERAL

P81 Optics
(G02)

P82 Photographic apparatus
(G03B)

P83 Photographic processes/compositions
(G03C)

P84 Other photographic
(G03D-H)

P85 Educational, cryptographic or advertising apparatus or systems
(G09)

P86 Musical instruments, acoustics
(G10)

Q: Mechanical

Mechanical Engineering- all IPC B60-B68, E and F.

Q1 VEHICLES IN GENERAL

Includes mechanical aspects of vehicles in general and associated vehicle equipment.

Q11 Wheels; Tyres; Connections

Alloy, steel, spoked wheels. Hubs, axles, rims, bearings, covers. Snow chains, spikes. Wheel manufacture, assembly and mounting. Inflatable, solid, runflat, heavy duty tyres. Tyre sidewalls, beads, valves, reinforcements, inserts. Tyre manufacture, mounting and inspection. Connections, hitches, towing, draw gear.
(B60B-D)

Q12 Suspension systems

Rigid and resilient suspensions. Springs, dampers, shock absorbers, anti-roll bars. Ride height adjustment. Ball joints, Panhard rods, Watt linkages, trailing arms.
(B60G)

Q13 Powertrain; Chainset; Transmission systems and their control

Automatic, double clutch, manual, semi-automatic, CVT transmissions. Torque converter, clutch, retarder, gearbox, differential. All-wheel drive, 4WD. Cranks, pedals. Cooling and lubrication.
Powertrain/ transmission control. Power take-offs.
(B60K, B60W, B62M)

Q14 Vehicle accessories

Seats, saddles, beds. Safety devices, inflatable airbags, seatbelts, crash bars, horns, reflectors. Sun shades/visors, curtains. Mirrors, windscreen wipers. Luggage racks, panniers, mudguards. Sidecars, forecars. Anti-theft arrangements, locks. Steps, stands. Heating, ventilating and air-conditioning. Sanitation.
(B60H, B60N, B60Q, B60R, B62H-J)

Q15 Vehicle arrangements for transporting special loads
Loading and unloading arrangements. Ramps, platforms, conveyors, belts, rollers, vibrators. Carrying buildings, meat, animals, reels, vehicles, concrete. Cargo tie-down equipment. On-board weighing equipment.
(B60P)

Q16 Vehicle servicing; Maintenance; Cleaning equipment; Vehicle design and manufacture
Servicing, maintenance, repair. Car wash, cleaning. Vehicle manufacture/assembly.
(B60S)

Q17 Vehicle construction; Fittings; Propulsion arrangements
Subframes, chassis, superstructures. Doors, windows. Sunroofs, convertible roofs. Dashboards, instrumentation. Body finishing parts. Endless tracks. Air·cushion equipment. Engine propulsion arrangements. Engine cooling, mounting, lubricating. Noise/vibration/harshness reduction/control.
(B60J-K, B60R, B60V·W)

Q18 Brake systems; Steering systems; Control
Discs, drums, pads, callipers, valves, cylinders. Disc/drum brake assemblies. Brake cooling. Brake control, pedals, levers. Steering systems. Rack and pinion. Hydraulic power-assistance. Steering wheel, steering column.
(B60T, B62L)

Q19 Vehicle applications
Cycles, motorcycles, scooters, mopeds. Cars, vans, trucks, buses, taxis. Military vehicles, tanks. Agricultural vehicles, tractors, combine harvesters.
Recreational vehicles, SUV, MPV, motor home, camper van, snow mobile. Emergency vehicles, police car, fire engine, ambulance. Electric and hybrid vehicles.

Q2 SPECIAL VEHICLES
Includes mechanical aspects of special vehicles.

Q21 Railways
Track construction. Station/platform equipment. Monorail, elevated, rope/cable, tramway, funicular, rack railways. Propulsion. Passenger carriage, freight car, wagon, hopper, buffer car. Superstructures, under frames, bogies, doors, windows. Brake systems. Accessories. HVAC, sanitation. Railway servicing, maintenance, manufacture, assembly. Train control. Level crossings, gates, signals, points.
(B60L-M, B61)

Q22 Hand/foot/animal drawn vehicles
Hand carts, wheelbarrows. Perambulators. Sledges/ice boats. Wheelchairs. Foot propelled vehicles. Horse-drawn carts.
(B62B-C)

Q23 Cycles - discontinued 2006
From 200601 cycles are incorporated into Q11-Q19 classes.

Q24 Ships; Waterborne vessels; Related equipment
Hulls, frames, keels, decks, bulkheads, masts. Windows, doors, hatches, port holes. Accessories. Heating/ventilating/air-conditioning. Sanitation. Desalination plants. Safety equipment, fire- fighting, lifeboats, life vests. Mooring/anchoring. Ship propulsion, propellers, engines, steering. Boats, submarines, hovercraft, surfboards, canoes. Harbour, dock, pier, jetty, boat hoist. Marine vessel servicing, maintenance, manufacture, assembly.
(B63)

Q25 Aircraft; aviation; cosmonautics
Aircraft construction, fuselage, hull, wings. Doors, windows, undercarriage. Accessories. Sanitation, toilets, shower, HVAC. Safety systems, fire-fighting, oxygen supply, escape slide, parachute. Aircraft propulsion and steering. Altitude/attitude control, flaps, control surfaces. Balloon, helicopter, glider, military, commercial aircraft. Ground equipment, hangar, runway construction. Space vehicles. Aircraft/spacecraft servicing, maintenance, manufacture, assembly.
(B64)

Q3 CONVEYING, PACKAGING, STORING

From 2012 manual codes have been assigned for all mechanical details of conveying, packaging and storing.
(B65, B66)

Q31 Packaging processes and equipment

From 2012 Q31 has been redefined to cover codes that are intended to highlight the equipment/methods etc. used for packaging/labelling material/goods during primary and secondary packaging. The type of container/bottle being filled/labelled/closed etc., as well as the container material can be specified by assigning Q32 and Q33 codes respectively. The type of product being packaged/bottled can also be highlighted by the assignment of Q34 codes. For novel details of the actual container/bottle or its closure see Q32 codes instead. Details of transit packaging are coded under Q32-T. Prior to 2012 Q31 remains searchable for packaging and labelling in general.
(B65B, C, B67)

Q32 Container/Closure Types, Special packaging features and Transit packaging

From 2012 Q32 has been redefined to cover container and closure types and special features of containers/packaging. Q32 codes should be used in conjunction with Q31, Q33 and Q34 codes as appropriate. Manufacturing and recycling details are covered by Q31-R. Prior to 2012 Q32 remains searchable for containers in general.
(B65D)

Q33 Packaging container and closure materials

From 2012 Q33 has been redefined to highlight the material the container or closure is made of. Q33 codes should be used with Q31, Q32 and Q34 as appropriate. Prior to 2012 Q33 remains searchable for closures in general.

Q34: Types of goods packages, bottled, bound, labelled, unpacked

From 2012 Q34 has been redefined to highlight the type of product being packaged/bottled etc. and should be used in conjunction with other Q31-Q33 codes as appropriate.
Prior to 2012 Q34 remains searchable for packaging elements/types in general (now covered in general by Q32).

Q35: Refuse Collection; Conveyors

(B65F, G)

Q36: Handling Thin Materials

(B65H)

Q37 Container traffic (pre-1984 only)

Q38: Hoisting; Lifting; Hauling; Trucks

From 2012 manual codes have been assigned for all mechanical details of hoisting, lifting, hauling and trucks.
(B66)

Q39 Liquid handling, saddlery, upholstery (This class was discontinued from 2012)

From 201201 liquid handling is incorporated into Q31-Q34, saddlery is incorporated into P36 and upholstery is incorporated into P27.

Q4 BUILDINGS, CONSTRUCTION

Q41 Road, rail, bridge construction
From 2015 manual codes have been assigned for all mechanical details of road, rail, and bridge construction.
(E01)

Q42 Hydraulic engineering, soil shifting and sewerage
From 2015 manual codes have been assigned for all mechanical details of hydraulic engineering, soil shifting and sewerage systems. (See also X25-D).
(E02, 3)

Q43 General building constructions
From 2015 manual codes have been assigned for all mechanical details of general building constructions.
(E04B)

Q44 Structural elements
From 2015 manual codes have been assigned for all mechanical details of structural elements.
(E04C)

Q45 Roofing, stairs, floors
From 2015 manual codes have been assigned for all mechanical details of roofing, stairs and floors.
(E04D, F)

Q46 Building aids, special structures, ladders
From 2015 manual codes have been assigned for all mechanical details of building aids, special structures and ladders.
(E04G, H, E06C)

Q47 Locks, window and door fittings
From 2015 manual codes have been assigned for all mechanical details of locks, window and door fittings.
(E05)

Q48 Blinds, shutters, doors and windows
From 2015 manual codes have been assigned for all mechanical details of blinds, shutters, doors and windows.
(E06B)

Q49 Mining
From 2015 manual codes have been assigned for all mechanical details of mining and quarrying apparatus.
(E21)

Q5 ENGINES; PUMPS; COMPRESSORS; FLUID PRESSURE ACTUATORS

Includes engines, pumps, compressors, actuators etc. of relevance to the transportation area.

Q51 Internal combustion engines; Reciprocating engines; Rotary engines

Internal combustion engines. Reciprocating, rotary, oscillating piston engines. Hot gas positive displacement engines, steam engines. Pistons and cylinders. Valves and valve drive arrangements. Internal Combustion (IC) engine cooling/lubricating. Fuel systems. Ignition systems. Exhaust systems, silencing, pollution control.
(F01, F02B, D, F, G, M, N, P)

Q52 Reaction engines: External combustion; Gas turbines; Rockets

Gas turbine, turbofan, turboprop, RAMJET, rocket engines. Pulse detonation engines. External combustion engines, steam turbines. Rotors, stators, nozzles, nacelles, afterburners. Fuel systems. Ignition systems. Lubrication and cooling.
(F01D, F02C, F02K, F02M)

Q53 Positive displacement fluid engines {i.e. driven by fluid)

Liquid driven positive displacement engines and motors. Reciprocating, rotary, oscillating piston engines. Valves, pistons, cylinders, seals.
(F03C)

Q54 Non - positive displacement fluid engines (i.e. driven by fluid);

Miscellaneous motors and machines for producing mechanical power/thrust. Liquid-driven non-positive displacement engines and motors. Impulse, reaction, friction, endless chain type engines. Waterwheels, water turbines. Francis, Kaplan and propeller turbines. Spring motors. Gravity/inertia motors. Wind, solar, geothermal, muscle power motors.
(F03B, D, G, H)

Q55 Positive displacement fluid machines/pumps/compressors (i.e. for driving fluid)

Positive displacement pumps, compressors. Scroll compressors. Reciprocating, rotary or oscillating piston machines. Valves, seals, rotors, casings.
(F04B, C)

Q56 Non-positive displacement fluid machines/pumps/compressors (i.e. for driving fluid)

Radial flow, axial flow, jet and diffusion pumps and compressors. Fans. Siphons. Shafts, bearings, rotors, casings, cavitations reducers.
(F04D, F)

Q57 Fluid pressure actuators; Hydraulic/pneumatics in general

Telemotors. Servomotors. Pyrotechnic actuators Controlling fluid flow. Hydraulics.
(F15)

Q6 ENGINEERING ELEMENTS

Includes novel engineering elements of relevance to the transportation area.

Q61 Fastening elements; Connections

Nuts, bolts, washers. Rivets and rivnuts. Nails, staples, dowels. Clamps, suction cups, hooks. Torque-limiting, anti-tamper, locking, friction grip, key connections.
(F16B)

Q62 Shafts and bearings

Flexible and rigid shafts. Crankshafts, eccentrics. Pivotal connections. Ball joints. Ball roller, sliding contact and hydrodynamic bearings. Cooling and lubricating. Manufacture.
(F16C)

Q63 Couplings; Clutches; Brakes; Springs; Dampers; Universal joints

Constant velocity (CV) joints. Slip, yielding, impulse couplings. Fluid couplings. Clutches. Disc, drum and band brakes. Brake pads, callipers. Springs, shock absorbers, dampers. Coil springs and leaf springs.
(F16D, F)

Q64 Belts, Chains, Gearing

Drive belts, timing belts. Drive chains. Pulleys, sprockets, gearing. Cams, cam followers, worms, toothed gears. Fluid gearing. Gearing control, gear levers. Lubrication and cooling.
(F16G, H)

Q65 Pistons, cylinders, packing

Pistons, plungers. Cylinders and liners. Seals, packing. Piston rings
(F16J)

Q66 Valves; Taps; Cocks; Vents

Lift, gate, sliding, diaphragm and rotary valves. Valve seats, seals, casings, housings. Poppet valves. Check valves. Safety/equalising valves. Vent valves.
(F16K)

Q67 Pipes; Joints; Fittings

Pipes and hoses. Pipe/hose connections/joints. Compression joints. Quick fastening/release connections. Seals. Clips. Pipe laying and repair.
(F16L)

Q68 Other engineering elements

Frames. Machinery beds. Engine beds. Axle stands. Trestles. General lubrication arrangements. General safety devices.
(F16M-S)

Q69 Storing/distributing gas/liquid

Pressure vessels. Gas holders/tanks. Vessel filling and discharging equipment. Pipeline systems.
(F16T, F17)

Q7 LIGHTING, HEATING

Q71 Lighting
(F21)

Q72 Steam generation
(F22)

Q73 Combustion equipment/processes
(F23)

Q74 Heating, ranges, ventilating
(F24)

Q75 Refrigeration, liquefaction
(F25)

Q76 Drying
(F26)

Q77 Furnaces, kilns, ovens, retorts
(F27)

Q78 Heat exchange in general
(F28)

Q79 Weapons, ammunition, blasting
(F41, 42)

S: INSTRUMENTATION, MEASURING AND TESTING

Includes electrical aspects of medical equipment, photographic and printing apparatus.

S01 Electrical Instruments

Oscilloscopes, multimeters, electricity meters, semiconductor devices and PCB testing, NMR, MRI, magnetic and electric field measurement, radio test equipment, instrument housing and other details.
(G01R, G12B)

S02 Engineering Instrumentation

Measuring dimensions, weight, flow rate, mechanical vibrations, force, acceleration and velocity measurement, measurement transducers, testing engines and machines, gyroscopes, scales, dials, pointers and other details.
(G01B-H, L, M, P)

S03 Scientific Instrumentation

Photometry, calorimetry. Thermometers. Meteorology, geophysics, measurement of nuclear or X·radiation. Investigating chemical or physical properties. Immunoassay, LAB-ON-CHIP, Chemical indicators or reagents.
(G01J, K, N, T-W)

S04 Clocks and Timers

Electronic and mechanical clocks and watches. Time switches. Time interval measuring.
(G04B-G)

S05 Electrical Medical Equipment

Electrotherapy. Electrosurgical apparatus. Blood cell counters. Electrical diagnostic apparatus. Tomography. Veterinary apparatus.
(A61B, C, F-J, L, N)

S06 Electrophotography and Photography

Cameras, film projectors and processing (electrical aspects only). Electrography, xerography. Rotary press printers (electrical aspects only).
(G03, G03G)

T: COMPUTING AND CONTROL

Covers control systems, data recording equipment, computing devices and peripheral apparatus, including construction details.

T01 Digital Computers
Electronic data processors, interfaces and programme control. Internet, Mechanical digital computers.
(G06C-F, T, G16)

T02 Analogue and Hybrid Computers
Function evaluators, equation solvers, simulators.
(G06G, J)

T03 Data Recording
Analogue and digital recording on tape, disc etc, using for example, magnetic, optical, magneto-optical, capacitive methods.
(G11B)

T04 Computer Peripheral Equipment
Card and tape punches and readers. Magnetic, optical and smart cards. VDUs, character and graphics generators. Pattern recognition, magnetic ink recognition, bar codes. COM equipment.
(G06K)

T05 Counting, Checking, Vending, ATM and POS Systems
Counting systems. Ticket issuing, registering and franking apparatus. Attendance registering apparatus. Coin and paper currency handling. Point-of-sale equipment. Electronic funds transfer.
(G06M, G07B-G)

T06 Process and Machine Control
General control systems. (Non)numerical, programmable and adaptive control. Control of non-electrical variables e.g. temperature or flow. Control system applications e.g. machine tools, lifts.
(G05B, D)

T07 Traffic Control Systems
Road traffic monitoring. Road traffic control. Traffic light systems, flow control. Traffic, weather and navigation data updating.
(G08G)

U: SEMICONDUCTORS AND ELECTRONIC CIRCUITRY

Includes semiconductor components per se, their manufacture and circuitry. Circuits using electronic components are included, e.g. filters and oscillators.

U11 Semiconductor Materials and Processes

Semiconductor, insulating and conductive materials. Crystal growth. Substrate and layer processing: deposition, etching, doping and heat treatment. Packages, mountings and assembly. Testing and handling of both integrated and discrete semiconductor devices. (Manufacture of LEDs, lasers, solar cells and aspects of thick film and hybrid circuits are covered in U12 and U14).
(C30B, H01L)

U12 Discrete Devices

Discrete semiconductor devices or specific components of integrated circuits. Optoelectronic devices: discrete photodetectors, LEDs and lasers both discrete or array. Solar cells. Hall-effect devices. Diodes, capacitors and resistors. Bipolar transistors, thyristors, FETs. Quantum interference devices. Micromechanical devices. Semiconductor transducers.
(H01L, H10D, H10F, H10K)

U13 Integrated Circuits

Digital circuits, especially with matrix array, e.g. ROM, DRAM, SRAM memories, programmable logic and gate array. Solid state image sensors, e.g. CCD, photodetector array. Excludes routinely integrated circuits with no integration novelty.
(H01L)

U14 Memories, Film and Hybrid Circuits

Digital memories including magnetic, optical, semiconductor, ferroelectric, analog memories. Testing of memories. Thermoelectric devices. Superconductive materials and devices. Acoustic wave devices. Thin film arrays and layers. Thick film and hybrid circuits including multilayer ceramic wiring boards and aspects of manufacture. Electroluminescent light sources. Liquid crystal displays, electrochromic and electrophoretic displays.
(G11C, H01L, H10B, H10N)

U21 Logic Circuits, Electronic Switching and coding

Logic gates, inverters, buffers, field programmable gate arrays. A/D and D/A conversion, position encoders, delta modulation. Code conversion, data compression, error detection and correction. Counter circuits, frequency dividers. Electronic switching, proximity/touch switches.
(H03K, M)

U22 Pulse Generation and Manipulation

Rectangular and triangular wave oscillators, pulse generators (astable, bistable, etc). Pulse shaping and manipulation. Pulse modulation and demodulation including PAM, PPM, PFM, and PDM. Digital filters. DSP.
(H03H, K, L)

U23 Oscillation and Modulation Oscillators, mixers.

Amplitude and angle (de)modulation. Frequency and
phase comparators. PLLs, indirect and direct frequency synthesisers.
(H03B-D, H03L)

U24 Amplifiers and Low Power Supplies

DC, LF, HF, small signal and power amplifiers. Gain control. Volume compression or expansion. Limiters. Voltage and current stabilisation, power supplies, converters, inverters, rectifiers. Low power protection.
(G05F, H02M, H03F, H03G)

U25 Impedance Networks and Tuning

Tone or bandwidth control. Impedance converters. Analogue filters (active and passive). Voltage dividers, attenuators, impedance matching, baluns. Tuning circuits. AFC.
(H03H, H03J)

V: ELECTRONIC COMPONENTS

Includes electrical and electro-optical components. Component mounting and construction details. Electrical discharge devices for purposes other than lighting are included.

V01 Resistors and Capacitors

Low power fixed and variable discrete devices. Thermistors and varistors. Electrolytic (including double-layer, super- and ultra-capacitors) and non-electrolytic capacitors.
(H01C, G)

V02 Inductors and Transformers

Low power inductive components. Communication type inductive components. (Electro)magnets. Magnetic materials.
(H01F)

V03 Switches, Relays

Low power switches and relays. Thermally or magnetically-operated switches.
(H01H)

V04 Printed Circuits and Connectors

PCBs and their manufacture. Low power connectors. Electronic apparatus, housings and constructional details. RFI/EMI screening. General circuit manufacture.
(H01R, H05K)

V05 Valves, Discharge Tubes and CRTs

Vacuum tubes, klystrons, TWTs, magnetrons, CRTs, field emission displays, camera tubes, X-ray tubes and operating circuits. Photoelectric discharge tubes, electron multipliers, plasma/ion processing tubes. Electron and scanning probe microscopes. Gas filled tubes. Gas discharge displays.
(G01Q, H01J, H05G)

V06 Electromechanical Transducers and Small Machines

Audio communication, and measurement-type transducers. Electromechanical resonators. Small electric machines and their controllers. Micromachines.
(H02K, H02P, H03H, H04R, H10N)

V07 Fiber-optics and Light Control

Light-guides, optical fibers, integrated optics and optical cables. Connectors, couplers, mode selectors, polarisers. Control of intensity, phase, polarisation, wavelength and direction. Spatial light modulators. Optical fiber amplifiers.
(G02B, F)

V08 Lasers and Masers

Optical resonators. Laser pumping, control e.g. intensity, frequency stabilisation, cooling, testing. Gas, semiconductor, solid state, dye-free electron, X-Ray Lasers. Masers.
(H01S)

W: COMMUNICATIONS

Covers telecommunications, audio and video equipment, telemetry/telecontrol and radar, aviation, marine and military systems where electrical details are included.

W01 Telephone and Data Transmission Systems

Error detection and correction. Code conversion. Synchronising. Secret data communication. Data networks (LAN, WAN, etc). ISDN. Baseband and broadband data transmission. Exchanges, call metering, test equipment, equipment racks. Intelligent network. Call-centre. Subscriber equipment, cordless, cellular and satellite phones. Telephone line and cable installation.
(H04L, M, Q, W)

W02 Broadcasting, Radio and Line Transmission Systems

Aerials, waveguides, resonators and other distributed constant components. Transmitters, transceivers, transponders. Communication receivers. Line transmission systems. Radio systems, including diversity, relay, mobile (including cellular). Optical and ultrasonic wave transmission systems. Spread Spectrum communication. Secret communication, jamming. TV systems, including stereoscopic, cable, subscription, satellite, interactive and high definition. Stereophonic broadcast systems.
(H01P, Q, H04B, H, J, K)

W03 TV and Broadcast Radio Receivers

AM/FM and DAB radio receivers, car radios. TV receivers including text aspects and MHEG, DVB, high definition, satellite, 3D/stereoscopic, stereophonic and surround sound. Remote control and interconnection.
(H04)

W04 Audio/Video Recording and Systems

Stereophonic systems, loudspeaker enclosures, public address. Audio/visual recording applications, formatting, signal processing and constructional aspects. General audio signal processing and sound mixing. Electronic musical instruments. Video cameras, TV studio and special effects equipment. General video signal processing. Projection TV and analogous systems. Video games, karaoke. Electronic educational apparatus. Sports equipment. toys. Speech coding, analysis and synthesis. Anti-phase sound cancelling. Hearing aids. Audio and video aspects of multimedia.
(G10H, L, G11B, H04N)

W05 Alarms, Signalling, Telemetry and Telecontrol

Burglar and fire alarms. Personal call arrangements. Paging systems. Signal transmission systems for remote control and monitoring, e.g.in home bus systems. Vehicle remote control bus systems. Advertising arrangements (electrical aspects).
(G08B, C)

W06 Aviation, Marine and Radar Systems

Radar, sonar and lidar. Velocity and depth measuring equipment. Position fixing and direction finding. Navigation systems. e.g. CPS. Airport control systems. Ship and aircraft control and instrumentation. Flight simulators. Space vehicles, including satellites.
(G01S)

W07 Electrical Military Equipment and Weapons

Target indicating systems. Sighting and aiming devices. Missile direction control. Military training equipment. Arming and safety devices. Electric weapons. Personnel and equipment protection. Battlefield communications. Military reconnaissance.
(F41, F42B, C)

X: ELECTRIC POWER ENGINEERING

Includes power generation, storage, distribution and utilisation. Electrical details of ground vehicles. Industrial-use patents with significant electrical detail are included. Patents relating to domestic electrical appliances do not have to contain electrical novelty to be included.

X11 Power Generation and High Power Machines

Conventional power generating prime movers. Dynamo-electric machines. MHD generators.
(H02K, N)

X12 Power Distribution/Components/ Converters

High power AC, DC and HVDC distribution/control. Power and communication cables. Superconducting cables, coils and magnets. Installing power cables and lines. Power transformers, reactors. Spark gaps and circuits. Insulators. High power connectors. Power converters. Conductive, superconductive and insulating materials.
(H01B, H01T, H02G, H02J, H02M)

X13 Switchgear, Protection, Electric Drives

Electric machine and static power converter controllers. Switchboards, switchyards, switchgear. Power system protection. Circuit protectors, circuit breakers, fuses.
(H02B, H02H, H02P)

X14 Nuclear Power Generation

Nuclear reactor processes, components and power plants. Control mechanisms. Plasma techniques. Particle accelerators.
(G21, H05H)

X15 Non-Fossil Fuel Power Generating Systems

Geothermal, wind, wave and solar energy, types of power generation.
(F03D, F24J, H10F, H10K)

X16 Electrochemical Storage

Primary, secondary and fuel cells and batteries. Battery chargers. Non-electrochemical storage of electric energy.
(H01M)

X21 Electric Vehicles

Electric cars, trolley buses, hybrid vehicles, fuel cell vehicles. Propulsion, braking. Traction batteries. Control equipment; Intra/inter-vehicle communications, multiplexing.
(B60L)

X22 Automotive Electrics

Vehicle accessories. Vehicle lighting. IC engine ignition. IC engine controllers. Batteries and charging. Starting motors and generators. Engine and vehicle instrumentation. Non-engine-related controllers e.g. transmissions, brakes. Passenger safety. Intra/inter-vehicle communications, multiplexing.
(B60K, Q, R, T, F02D, M, N, P; F21M)

X23 Electric Railways and Signalling

Electric propulsion and braking. Traction motors and control. Traction power supplies. Power supply lines, current controllers. Signalling equipment. Railway traffic control
(B60L, B61L)

X24 Electric Welding

Electric soldering. AIT, induction, electron beam, resistance, laser beam, solid state and HF welding. Electroerosion.
(B23K)

X25 Industrial Electric Equipment

3-D printing / Additive manufacturing. Electric furnaces and kilns. Resistance, induction, electric discharge and EM field heating. Electrostatic spraying and cleaning. Vibrating apparatus. Electrolytic processes, electro-refining metals. Electrically powered tools. Industrial drying equipment. Ore separating magnets. Magnetic work holders, lifting magnets. Textile and paper manufacture, sewing and embroidery machines. Industrial food processing. Industrial components e.g. pumps, fans. Electric construction/building equipment. Electric agricultural equipment. Cryogenics.
(H05B, F27)

X26 Lighting
Discharge, incandescent and electric arc lamps. Operating and control equipment. Light fittings. Portable lighting devices. Stage lighting equipment LED, EL and fiber-optic illumination, including display back-lighting.
(F21, H01J, H01K, H05B)

X27 Domestic Electric Appliances
Washing machines, dryers, irons. Vacuum cleaners. Electric cookers, microwave ovens. Kitchen equipment. Refrigerators. Water heaters. Space heating and air conditioning equipment. Personal and hygiene electrical appliances. Home automation appliances.
(A47, F24)

Appendix 1 – Historical Revision of Section A Classes

A major revision of the Section A Derwent Classifications took place in 1972. The table below shows the full list of pre-1972 classes plus details of the changes made at that time. Please note that the discontinued classes are still searchable in DWPI for the pre-1972 time period.

Class	Pre-1972 Definition	1972 Revision	1972 Revision Notes
	Addition Polymers; Natural Polymers		
A11	Polysaccharides; natural rubber; other natural polymers		
A12	Polymers of di-and higher olefins; acetylenics; nitroso compounds		
A13	Polymers of aromatic mono-olefins; including polystyrene		
A14	Polymers of substituted mono-olefins containing nitrogen	Scope change	Broadened to include concepts from discontinued classes A15 and A16
A15	Polymers of halo-substituted aliphatic mono-olefins not containing nitrogen	Discontinued	Subsequently classified with A14
A16	Polymers of substituted aliphatic mono-olefins not containing nitrogen or halogen	Discontinued	Subsequently classified with A14
A17	Polymers of unsubstituted aliphatic mono-olefins		
A18	Addition polymers in general		
	Condensation Polymers		
A21	Epoxides	Scope change	Broadened to include concepts from discontinued class A22
A22	Aminoplasts; phenoplasts	Discontinued	Subsequently classified with A21
A23	Polyesters, including polycarbonates; polyesteramides; alkyds; other unsaturated linear polymers	Scope change	Broadened to include concepts from discontinued class A24
A24	Polyamides	Discontinued	Subsequently classified with A23
A25	Polyurethanes; polyethers		
A26	Other organic condensation polymers	Scope change	Broadened to include concepts from discontinued class A27
A27	Inorganic polymers, including silicones	Discontinued	Subsequently classified with A26
A28	Condensation polymers in general		

Class	Pre-1972 Definition	1972 Revision	1972 Revision Notes
	Processing; General Additives and Applications		
A31	Preliminary processes		
A32	Forming – annealing, orienting, drawing, calendering, casting, coating	Scope change	Broadened to include concepts from discontinued classes A33 and A34
A33	Forming – expanding, extrusion, laminating, forming from sheet	Discontinued	Subsequently classified with A32
A34	Forming – moulding, pressing, sintering, spinning, injection, blow	Discontinued	Subsequently classified with A32
A35	Other processing and general		
A36	Additives for general use	Discontinued	Subsequently classified with A60
A37	General applications of plastics (i.e. where no other heading is applicable)	Discontinued	Subsequently classified with classes A81 to A97
	Monomers and Condensants		
A41	Addition monomers containing one double bond	Scope change	Broadened to include concepts from discontinued classes A42, A43 and A44
A42	Addition monomers containing two or more double bonds, or containing acetylenic bonds	Discontinued	Subsequently classified with A41
A43	Condensants	Discontinued	Subsequently classified with A41
A44	Other monomers e.g. metal containing and nitroso compounds	Discontinued	Subsequently classified with A41
	Polymerisation Controllers		
A51	Catalysts and activators	Discontinued	Subsequently classified only with the polymer produced i.e. classes A11 to A28
A52	Modifiers, regulators, inhibitors and others	Discontinued	Subsequently classified only with the polymer produced i.e. classes A11 to A28
	Additives and Compounding Agents		
A60	Additives and Compounding Agents	New	Replaced discontinued classes A36 and A61 to A69
A61	Antioxidants, stabilisers	Discontinued	Replaced by A60
A62	Blowing agents	Discontinued	Replaced by A60
A63	Crosslinkers; accelerators	Discontinued	Replaced by A60
A64	Dyes and pigments	Discontinued	Replaced by A60
A65	Flame retardants	Discontinued	Replaced by A60
A66	Miscellaneous – subbing agents, antiseptics, lubricating agents and mould releasers etc.	Discontinued	Replaced by A60

Class	Pre-1972 Definition	1972 Revision	1972 Revision Notes
A67	Plasticisers and extenders	Discontinued	Replaced by A60
A68	Reinforcing agents and fillers	Discontinued	Replaced by A60
A69	Surface-active agents; solvents	Discontinued	Replaced by A60
	Polymer Manufacture		
A71	Manufacture of natural polymers	Discontinued	Subsequently classified with A11
A72	Addition (co)polymerisation excluding block and graft copolymerisation	Discontinued	Subsequently classified with appropriate classes from A12 to A18
A73	Production of ordered addition polymers	Discontinued	Subsequently classified with appropriate classes from A12 to A18
A74	Condensation polymerization	Discontinued	Subsequently classified with appropriate classes from A21 to A28
A75	Chemical modification of polymers, including the modified polymer itself	Discontinued	Subsequently classified with appropriate classes from A11 to A28
A76	Other miscellaneous processes, e.g. purification; testing	Discontinued	Subsequently classified with classes A31 to A35, or A11 to A28 as appropriate
	Applications		
A81	Adhesives and binders, including chipboard		
A82	Coatings, impregnations, polishes (excluding textile finishing)		
A83	Clothing, footwear		
A84	Household and office fittings		
A85	Electrical applications		
A86	Fancy goods, games, sports, toys		
A87	Textile auxiliaries		
A88	Mechanical engineering and tools		
A89	Photographic, laboratory equipment, optical		
A91	Ion-exchange resins, polyelectrolytes		
A92	Packaging and containers		
A93	Roads, building, construction flooring		
A94	Semi-finished materials - fibres, films, foams		
A95	Transport		

Class	Pre-1972 Definition	1972 Revision	1972 Revision Notes
A96	Medical, dental, veterinary		
A97	Miscellaneous goods not specified elsewhere		

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