C Chemistry
* Chemical phenomena and the associated human activities focused upon them, treated at the most general level.
* For applied chemistry, see Process industrial technology (in Class U/V). An alternative location (not recommended) for applied chemistry is provided at CY for libraries wishing to collocate the technology with chemistry in Class C.

C2 . *Common subdivisions*
* Add to C2 numbers 2/9 in Auxiliary Schedule 1 with the same additions & modifications as in AY2 2/9; eg

C22 . . *Forms of presentation*
C23 G . . . Serials
P . . . Technical data
. . Persons in the subject
C24 . . . Chemists
* See also Biography C29 2

C . . . . Profession of chemistry
* For education & training, see C26 A.

C25 . . Organizations in chemistry
L . . Communication & information in chemistry
LO . . . Terminology
* For nomenclature, see compounds CGH 25L O.

P . . . Documentation in chemistry
VA . . . . Information services in chemistry
VB . . . . . Computerized information services
C26 A . . Education & training in chemistry
* Alternative (not recommended) to locating in Education at JKT C.

C27 . . History of chemistry
C . . . Alchemy
D . . . . Transmutation
E . . . . Philosophers' stone
G . . . Phlogiston theory
* See also Combustion CDV P

C29 2 . . Biography of chemists
N . Social aspects of chemistry, chemistry & society
* Add to C29 N letters A/Y following K so far as applicable.

R . Research
* Activity aimed at extending the current corpus of knowledge about chemical phenomena.
* For theoretical chemistry, see C34.
* Add to C29 R letters B/T following AY3 2; eg,

RC . . Methodology
X . Science of science of chemistry
* In the context of scientific disciplines this area of discourse has been termed (particularly in Europe) "science of science" and connotes the abstract study of the science as compared with its empirical study and practice. The external mental environment within which the whole discipline of chemistry is viewed.
* General explanatory texts, elementary or advanced, which detail what chemistry and chemical phenomena are about should be classed at C above.
* For social aspects of chemistry, see C29 N.
* Add to C29 X numbers & letters 5/S following AY2 9X;
* Add to C2 letters A/X following A in AA/AX; eg

Chemistry C
Science of science of chemistry C29 X

C2A . Philosophy of chemistry
C2L X . Scientific method in chemistry
* Methodology in the most abstract sense.
* For practical methods and procedures, see C36.

C2M . Mathematics in chemistry
C2V J . . Topology in chemistry
C2X . Statistics & probability in chemistry
General operations & agents in chemistry
* Add to C numbers & letters 2YM/82D following AY, with the modifications indicated at C33/34.

C2Y Q . Organization & management of work in chemistry
QS . . Operational research

C33 *Common properties*
D . Distribution
W . Continuity
X . Conditions
Y5 . . Electric field
YG . . Systems characteristics
C34 . Theoretical chemistry
* As distinct from practical chemistry. Classify more specifically if possible. The term is sometimes used as synonymous with quantum chemistry (see C34 CV).
* An alternative location (not recommended) is given at C8B.
* Add to C34 letters B/D following AY8 with the following modification:

. . Particular theories
* Theories particular to a given chemical phenomenon go with that phenomenon.

CV . . . Quantum chemistry

C36 . Practical chemistry, laboratory practice
* For bulk processing of materials, see Process industrial technology VL.

. . Unwanted effects in chemical work
C37 . . . Work hazards, accidents (chemical work), safety measures, protective measures
DV . . . . Warning systems
ES . . . . Protective equipment
EU . . . . . Protective clothing
EV . . . . . Specific items
* Arrange A/Z; eg

EVF A . . . . . Facemasks
EVF U . . . . . Fume cupboards, fume hoods
J . . . . Pollution hazards (Practical chemistry)
MG . . . . Dangerous materials (Practical chemistry)
N . . . . . Specific substances
C38 E . . . . Human error

Equipment & materials

Chemistry C
Practical chemistry C36
Unwanted effects in chemical work
. . Human error C38 E

C3B Equipment & materials (together)
. *Operations on equipment & materials*
D . . Design
F . . Installation & use
K . . Testing
* For calibration, see Instruments C43 BW
N . . Control (of operations on equipment & materials)
P . . . Intelligent control devices
* See also Smart materials C3T V
C3C . . Handling
H . . . Holding, supporting
H3U . . . . Supports
I . . . . . Specific supports, A/Z
ICL . . . . . Clamps
ITR . . . . . Tripods
J . . . Joining
K . . . Closing
M . . . . Packing material, caulking
Q . . . . Seals, stoppers
. *Properties of equipment & materials*
C3K GP . . Heat properties (Equipment & materials), thermal properties (Equipment & materials)
C3L . . Chemical properties (Equipment & materials)
C3R . Materials (Practical chemistry)
. . *Kinds of materials by composition*
C3T G . . . Glass (Equipment & materials)
H . . . Ceramics (Equipment & materials)
J . . . Plastics (Equipment & materials)
. . *Kinds of materials by function*
* For reagents, see C5X
S . . . Barrier materials
T . . . Refractories
V . . . Smart materials
C3U . Equipment, apparatus, plant
TG . . Glassware
C3X . . Chemical laboratories
C4 . . Instruments & instrumentation in chemistry
* For intelligent instruments, see C3B P
C43 BW . . . Calibration
C45 . . . *Components*
* For computers see C64 C
C48 . . . . Control instruments, control systems
. . . . *Kinds of components by energy system*
C4A C . . . . . Electrical & electronic instrumentation
* For computers, see C64 C
. . . . *Kinds of components by function*
C4K . . . . . Switching devices
C4N . . . . . Indicators
C4T RY . . . . . Viewing devices, display devices
SW . . . . . Windows (instrumentation)

Chemistry C
Practical chemistry C36
Equipment & materials C3B
. Equipment C3U
. . . . . Windows C4T SW

C5X . Reagents
* Substances used to produce a characteristic reaction in analysis or experiments in order to detect, measure, etc or otherwise examine other substances.
* Reagents serving a particular investigating technique go with the technique; eg Precipitation agents C8K T5X; Buffers C8U HY5 X.
. . *Properties*
A . . . Purity
C . . . Grades of reagent
CL . . . . Analytical grades
CM . . . . Commercial grades, crude grades
. . *Operations on reagents*
E . . . Sampling
* Obtaining a small quantity of a substance which is truly representative of the whole.
E37 . . . . Sampling points, sampling errors
E3U . . . . Equipment
ER . . . . Dry techniques
ES . . . . Wet techniques
ET . . . . Samples
EU . . . . . Primary standard samples
* Used as unit reference materials.
* For specific standards, see property, etc; eg acidimetric standards, oxidation standards.
. . *Reagents by activity/constitution*
* Add to C5X letters G/O following C; eg
HCA . . . Catalysts (Reagents)
IA . . . Acids (Reagents)
O . . . Organic reagents
T . . Reagents special to a given class
* Notation reserved for use when required.
C62 Investigative techniques in chemistry
* Applied to chemical phenomena in general; for techniques applied specifically to the handling and preparation of substances in experiment and analysis, see C8E.
C63 . Data handling, data processing
C64 B . Automated methods
C . Computer techniques in chemistry
D . . Computer programs
E . . Named computer systems
* Including named pieces of computer equipment.
. *By scale*
C67 . . Microtechniques, microchemical techniques, microchemistry
* Procedures in which the weight of the sample is very small (less than 1 mg or 1 ml) and often requiring especially small apparatus & microscopic observation.
C68 . . Ultramicroprocedures, nanotechniques
I . . Semimicrotechniques, submicroprocedures
* Procedures in which the weight of the sample is between 10/100 mgrm.

Preparative techniques

Chemistry C
Practical chemistry C36
. . By scale
. . . Semimicrotechniques C68 I

C68 M . . . Macrotechniques
* These are usually assumed; do not qualify specific techniques by this classmark and use this class only for works on macrotechniques in general.

C69 . . Physical methods
C6B . . . Mechanical techniques
C6G P . . . Thermal techniques
C6H I . . . Electrical techniques
C6I B . . . Electronic techniques
C6K . . . Radiation techniques
C6L . . . . Optical techniques
. . *Techniques by action on phenomenon*
C73 B . . . Sampling
C74 J . . . Detection
C76 . . . Measurement
C7A . . . Testing & evaluation
C7C . . . . Monitoring
C7F . . . Simulation
C7H . . . Visualization & imaging
C7I . . . . Imaging techniques
O . . . . . Nuclear magnetic resonance imaging
C7M . . . Spectroscopy
C7P . . . Tracer techniques
C7Q . . . Techniques special to a context
C82 Experimental chemistry
* If distinguished from practical chemistry (C36).
* Add to C82 letters D/T following AY8 2; eg
D . Design of experiments
C8B Theoretical chemistry
* Alternative (not recommended) to locating at C34.

C8E Preparative techniques
67 . Microtechniques
. *By energy system involved*
B . . Heating & cooling operations
C . . . Cooling
D . . . . Refrigeration
G . . . Heating
. . . . Equipment
G3U . . . . . Thermostats
. . . . *By energy source*
H . . . . . Gas heating
I . . . . . Heating oil
J . . . . . Other fuels
* Arrange A/Z; eg alcohol, kerosene.
K . . . . . Electric heating
L . . . . . Autoclaves
. . . . *By mode of operation of source*
M . . . . . Direct heating techniques
N . . . . . Ovens, furnaces
O . . . . . Burners, flames
OP . . . . . Blowlamps, blowpipes

Chemistry C
Preparative techniques C8E
By energy system involved
. . Heating C8E G
. . . . Direct heating techniques C8E M
. . . . . Blowlamps C8E OP

C8E OQ . . . . . Oxidizing flames
OR . . . . . Reducing flames
P . . . . Indirect heating techniques
PT . . . . . Baths
. . *By thermal treatment*
R . . . Combustion
S . . . Boiling
T . . . Roasting, calcining
By function in preparation
* The operations below display a variety of relationships, sometimes serving one end and sometimes another; eg to dissolve one substance in another is to combine them, but different solvents may be used to separate them. Some operations also are associated primarily with a particular state of matter (eg decanting of liquids) but are not necessarily confined to that state. So one sequence of operations is given below and compounding should reflect the particular relationship arising from a particular application.

C8G D . Production (Preparative chemistry)
* See also Extraction C8I K
DL . . Collection (Preparative chemistry)
E . Containing, storing
E3U . . Equipment
E3W C . . . Containers
E3W F . . . . Particular kinds of containers, A/Z
E3W FB . . . . . Beakers
E3W FR . . . . . Retorts
G . Weighing
G3U . . Equipment
G3W . . . Balances
G3W M . . . . Microbalances
G3X . . . . Other
* Arrange A/Z; eg helical spring balances, C8G G3X HE.
J . Size reduction
JK . . Compression
* For liquefaction, see C8W UH; C8W VGM
JM . . Crushing
JP . . Grinding
K . . Comminution
KM . . . Maceration
L . Size enlargement
LO . . Flocculation
* For flocculation in colloids, see CFO HO.
M . Density reduction
N . . Rarefaction

Chemistry C
Preparative techniques C8E
Density reduction C8G M
. Rarefaction C8G N

C8H Transferring substances, moving substances
3U . Equipment
3W . . Specific forms
* Arrange A/Z; eg burettes, funnels, pipettes, siphons.
C8I Separation (preparative chemistry)
J . Phase separation
K . Extraction
L . . Solvent extraction
N . . Leaching
P . Size separation
* For filtration, see C8L.
Q . . Screening
R . Water assisted separation
S . . Washing, elutriation
S3U . . . Equipment
S3W . . . . Washing bottles
T . . . Suspension media
C8J . Electroextraction, electrowinning
K . . Electrostatic separation
L . . Electromagnetic separation
M . Magnetic separation
R . Drying
X . Dilution & concentration
C8K B . . Dilution
E . . Concentration
* For evaporation, see C8W UGG.
P . . . Thickening
R . . . Phase separation concentration
* For flotation, see Process industrial technology VL.
S . . . . Sedimentation
T . . . . Precipitation
V . . . . Decanting
C8L . . . . Filtration
M . . . . . Vacuum filtration
P . . . . . Membraneous filtration
Q . . . . . Dialysis
R . . . . . Ultrafiltration
X . Centrifuging
C8M . Distillation
* Separation of liquids at different boiling points.
N . . Fractional distillation
P . . Vacuum distillation
T . . Steam distillation
U . . Dry distillation
V . . Destructive distillation
* See also Countercurrent adsorption CFH TH
C8N . Chromatography (Preparative chemistry)
* For chromatography in analysis (Adsorption analysis) see C9Q.
. *By purpose*
C8O . . Purification
Q . . . Scavengers
C8P . . Clarification

Chemistry C
Preparative techniques C8E
By function in preparation
. Separation C8I
. . . Clarification C8P

C8Q C . Combination
* See also Synthesis C8Y
E . . Mixing
F . . . Stirring, agitation
By physical chemistry property involved
* Add to C8R letters B/W following CA; eg
C8R P . Stereochemistry
. . Arrangement
PP . . . Sequencing
Preparative chemistry by reaction concerned
* Arranging for these reactions as part of an experiment, etc.
* For the chemical nature of these reactions, see CAY/CF.
* Add to C8S letters AY/F following CB;
* Add to C8T letters A/Y following CC;
* Add to C8U letters A/Y following CD;
* Add to CBV letters A/Y following CE; eg
C8T V . Decomposition
C8U A . Ion exchange
B . Oxidation-reduction
HY . Acidification & basification
HY5 X . . Buffers
By change of state
* Add to C8W letters A/O following CF; eg
C8W FR . Phase transition techniques
* For transitions special to a given state of matter, see the latter; eg Solids - Melting C8W VGN.
. . *By penetration*
HO . . . Sorption (Techniques)
HP . . . Sorbents
HR . . . . Absorption (Techniques)
HS . . . . Adsorption (Techniques)
HSR . . . . . Physical adsorption (techniques), physisorption (Techniques)
HU . . . . Chemisorption (Techniques)
. . *By states of matter*
K . . . Mixtures (Preparative chemistry)
M . . . Solutions (Preparative chemistry)
MF . . . . Solvents (Preparative chemistry)
MLX . . . . Standard solution preparation
By state of matter handled
* Add to C8W letters PY/W following CF; eg
S . Fluids (Preparative chemistry)
T . . Gases (Preparative chemistry)
TX . . Condensation (Preparative chemistry)
U . . Liquids (Preparative chemistry)
UGG . . . Evaporation
UGQ . . . . Boiling
UGS . . . Superheating
UH . . . Liquefaction (Gas to liquid)

Analysis

Chemistry C
Preparative techniques C8E
. . Fluids C8W S
. . . . Liquefaction C8W UH

C8W V . . Solids (Preparative chemistry)
VGF . . . Sublimation (Preparative chemistry)
VGM . . . Liquefaction (Solid to liquid) (preparative chemistry)
VGN . . . . Melting (Preparative chemistry), fusion (Preparative chemistry)
VGO . . . . . Vacuum fusion
VGQ . . . Solidification (Liquid to solid) (preparative chemistry)
VGR . . . . Freezing (Preparative chemistry)
VGT . . . . Supercooling (Preparative chemistry)
C8Y Synthesis (Preparative chemistry)

C9 Analysis, chemical analysis
C95 X . Reagents
XA . . Purity
XE . . Sampling
XT . . Reagents specific to a given form of analysis
* The notation -95XT may be added to any form of analysis to introduce a specific reagent.
C96 3 . Processing results
4D . . Computer programs
7 . Microtechniques
* For microanalysis, see C9B 7.
. *Kinds of analysis by technique*
* Add to C9B numbers 2/8 following AY6;
* Add to C9B 9 letters B/U following AY6 if applicable.
C9B 4B . . Automated methods
. . . Equipment
4B3 U . . . . Autoanalyzers
. . Microtechniques
7 . . . Microanalysis
8 . . . Ultramicrotechniques
8I . . Semimicrotechniques
8J . . Submicrotechniques
8M . . Macrotechniques
* Usually assumed; use this heading only if macrotechniques are distinguished from all others.
8N . . . Trace analysis (general), impurities analysis
* See also specific techniques; eg polarography, spectroscopy.
* For spot tests, see C9B SE.
D . . Combined methods (Analysis), hybrid methods (Analysis)
E . . Instrumental analysis
G . . Remote control analysis
J . . Fractional analysis
L . . High performance analysis
N . . Local analysis
P . . Field analysis
* Performed outside laboratory.

Chemistry C
Analysis C9
Kinds of analysis by technique
. Field analysis C9B P

C9B Q . Tests in analysis
R . . Dry tests
RE . . . Ashing, heat effects (Dry tests)
RF . . . Flame tests
RG . . . Blowpipe analysis
RH . . . . Borax bead tests, bead reactions (Analysis)
S . . Wet tests
* See also Gravimetric analysis C9D
SE . . . Spot tests
SF . . . Non-aqueous solvents (Wet tests)
SH . . . Anion identification
SI . . . Cation identification
V . Non-destructive analysis

Kinds of analysis by physical properties measured
C9D . Gravimetric analysis
* For quantitative analysis, see C9Q W.
E . . Vaporimetry
G . . Drop analysis
J . . Microcrystalloscopic analysis
V . Volumetric analysis
* For quantitative analysis, see C9Q W.
V5X . . Reagents
C9E . . Titration (Volumetric analysis), titrimetric analysis
5X . . . Reagents
E . . . Weight titration
. . . *Kinds of titrations by phase*
F . . . . Phase titration
G . . . . . Precipitation titration
. . . *Kinds of titrations by chemical reaction*
J . . . . Alkalinity titration, acid-base titration
K . . . . Redox titration
N . . . Complexometry, complexometric titration, chelatometry
. . . . Reagents
N5X . . . . . Chelate agents
O . . . . Heterometry
P . . . . Chelometry, chelometric titration
R . Capillary analysis
S . Kinetic methods in analysis
T . . Diffusion analysis
U . . . Dialysis (chemical analysis)
. *Analysis by wave properties*
* Add to C9F letters B/V following BF; eg
C9F NH . . Reflectance (Analysis)
O . . Resonance (Analysis)
C9G . Thermal chemical analysis, thermoanalysis
CY . . Differential thermal analysis
. . Gravimetric analysis
D . . . Thermogravimetric analysis

Spectrum analysis

Chemistry C
Analysis C9
Thermal chemical analysis C9G
. Gravimetric analysis
. . Thermogravimetric analysis C9G D

. Titration
C9G E . . Thermometric titration
F . . . Differential thermal titration
H . Differential scanning calorimetry, DSC
* Measures enthalpy changes as heat added or removed.
C9H Electroanalytical chemistry, electroanalysis, electrochemical analysis
. Gravimetric
D . . Electrogravimetry
DN . . . Internal electrogravimetry
DP . . . Spontaneous electrogravimetry
. Titration
E . . Amperometric titration, amperometry
EM . . . Chromoamperometry
EN . . Conductimetric titration
EO . . . High frequency conductimetric titration
EP . . Potentiometric titration
* For Determination of pH value, see CFM BKJ X.
EP3 U . . . Potentiometers
EQ . . . Chromopotentiometry
ES . . Ionometry
ET . . Coulometric titration, coulometry
EU . . . Chronocoulometry
EV . . . Chronopotentiometry
EW . . . Dielectrometric titration, dielectrometry
EX . . High frequency titration
C9I D . Electrodeposition analysis
* If distinguished from electroanalysis in general.
G . Polarographic analysis, polarography
H . . Differential polarography
I . . Other specific forms
* Arrange A/Z; eg
II . . . Inversion polarography
J . Voltametry
C9J . Electrophoresis (analysis), cataphoresis (analysis)
M . . Zone electrophoresis, sheet chromatography, electrochromatology
N . . Immunophoresis
O . . Isotachophoresis
P . . Isoelectric focussing
Y . Other electrical techniques
* Arrange A/Z; eg Non-Faradic admittance.
C9K Actinometry, radiometry

Chemistry C
Analysis C9
Actinometry C9K

C9M Spectrum analysis, spectroscopic analysis (general), spectrochemical analysis
* For spectrometry (if distinguished from spectroscopy) see C9N.
* Add to C9M numbers 4/5 and letters B/J following AY7 M, with the additions & amendments indicated below.
. Instrumentation
4 . . Spectroscopes
. *Operations*
BD . . Excitation (spectrum analysis)
BE . . . Activation analysis
* Usually by neutrons, or protons.
BF . . Observation
BFG . . . Spectrophotograpy
BFG L . . . . Spectrophotographs
BFM . . . Spectrophotometry
BFM 4 . . . . Spectrometers
. *Kinds of spectra measured*
BG . . Continuous spectrum analysis
BH . . Line spectrum analysis
BJ . . Band spectrum analysis
C . . Radiation spectrum analysis
CG . . . Emission spectrum analysis
CL . . . Absorption spectrum analysis
CM . . . Refraction, refractometric analysis
CN . . . Reflection spectrum analysis
CNR . . . . Reflectance spectrophotometery
CQ . . . Diffraction spectrum analysis
CQ7 6 . . . . Measurement
CR . . . Interference spectrum analysis, interferometric
CR7 JFR . . . . Interference spectrum microscopy
CT . . . Scattering specrum analysis
* For Raman spectra analysis, see C9M LR.
. *Spectrum analysis by wavelength, frequency*
* Add to C9M letters KM/LY following AY7 M; eg
KM . . Radiofrequency spectroscopy
KN . . . Nuclear magnetic resonance spectroscopy, NMR
L . . Optical spectroscopy
* Use this general class also for analysis using visible light specifically. For infra-red, see C9M LU.
. . . Radiation phenomena
LCP . . . . Polarization
LCP R . . . . . Rotational spectrum (analysis)
LCP S . . . . . Polarimetric analysis

Analysis

Analysis C9
Spectrum analysis C9M
Spectrum analysis by wavelength, frequency
. Optical spectroscopy C9M L
. . Radiation phenomena
. . . . . Polarimetric analysis C9M LCP S

. . *By optical property measured*
C9M LFG . . . Emission spectroscopy (analysis)
LFH . . . . Luminescent titration
. . . Absorption
* For Turbidimetric analysis, see C9M LFT.
LFL . . . . Optical absorption chemical analysis
LFL E . . . . . Photometric titration, spectrophotometric titration
LFL EM . . . . . Fluorophotometric analysis
. . . Refraction
LFM . . . . Refractometry
. . . Scattering
LFT . . . . Turbidimetric analysis, nephelometric analysis, photoextinction method (chemical analysis)
. . . Colour
LM . . . . Colorimetric analysis, colorimetry
* Meaning often extended to include absorption & transmission, in which case prefer spectrometry.
. . . . . Equipment
LM3 U . . . . . Colorimeters
LM3 W . . . . . Comparators
LM3 WT . . . . . Tintometers
LR . . Raman spectroscopy
LU . . Infra-red spectroscopy
LW . . Ultra-violet spectroscopy
LWY . Radiography (spectrum analysis)
. . X-rays
LX . . . X-ray phase analysis
LXC G . . . Emission X-ray analysis
LXC L . . . Absorption X-ray analysis
LXC Q . . . Diffraction analysis (X-rays)
LY . . Gamma rays (analysis)
M Particulate spectroscopy
* For mass spectroscopy, see atoms C9M P.
. Photons
NG . . Electromagnetic quantum spectroscopy
NP . Electron spectroscopy
. . Electron emission
NPC G . . . Photoelectron spectroscopy, ESCA, XPS
NPC Q . . Electron diffractometry
NPS . . Auger spectroscopy
NPX . . X-ray electron spectroscopy
NU . Nucleon spectroscopy
NV . . Proton spectroscopy
O . . Neutron spectroscopy
OCG . . . Neutron activation analysis
OCQ . . . Neutron diffraction analysis
P . Atomic spectroscopy, mass spectroscopy
PDL . . Atom fluorescence spectral analysis

Chemistry C
Analysis C9
Kinds of analysis by physical properties measured
. . Particulate spectroscopy C9M M
. . . Atomic spectroscopy C9M P
. . . . Atom fluorescence spectral analysis C9M PDL

C9M PL . . . . Atomic absorption analysis
Q . . . Molecular spectroscopy
QCG . . . . Molecular emission analysis
QCL . . . . Molecular absorption analysis
QU . . . Ion spectroscopy
QUO . . . . Resonance ionization spectroscopy
C9N . . Spectrometry
* If distinguished from spectroscopy. If in doubt, prefer C9M.
. . . Instrumentation
4 . . . . Spectrometers

Kinds of analysis by separation of components in mixture
C9Q . Chromatography (analysis), adsorption analysis
* Analysis characterized by techniques for separating the components of a mixture. A mobile phase, carrying the mixture, is moved in contact with a selectively absorbent stationary phase.
* For chromatography as a general technique for separation, see preparative chemistry C8N.
5X . . Reagents
. . *Operations*
74J . . . Detection
. . . . Instruments
74J 3U . . . . . Detectors (chromatography)
. . . Recording & presentation
74T . . . . Chromatographs, chromatograms
. . . . . Interpretation
74T S . . . . . Decoding (chromatography)
76 . . . Measurement
7QB . . . Separation mechanisms (analysis)
7QE . . . . Elution (chromatography), elutriation (chromatography)
7QG . . . . Activation (chromatography)
7QJ . . . . Deactivation (chromatography)
7QL . . . . Reactivation (chromatography)
7QN . . . . Location (chromatography)
* Establishing position of solute.
7QP . . . . . Displacement (chromatography)
7QR . . . . Fractionation (chromatography)
. . *Properties*
7R . . . Distance (chromatography)
* Travelled by solvents/components; characterizes and identifies components.
7RR . . . . Ry value (chromatography)

C9Q8WFFR

C9QVXV

Chromatography

Chemistry C
Analysis C9
Chromatography C9Q
Properties
. . Ry value C9Q 7RR

Techniques

C9Q 8WF FR . Phase transition techniques
. . *By penetration*
8WF HO . . . Sorption
8WF HP . . . . Sorbents (chromatography)
8WF HPQ . . . . . Mixed type sorbents
* Both stationary and mobile phases.
8WF HPR . . . . . Bonded groups sorbents
8WF HPS . . . . . Modified sorbents
. . *By state of matter*
8WF M . . . Solutions
8WF MF . . . . Solvents, eluents

Kinds of chromatography

A . In combination with other analyses
. *By mobility of phase*
B . . Stationary phase (chromatography), fixed phase (chromatography)
BL . . . Solid support (chromatography)
* When stationary phase is liquid.
C . . Moving phase, mobile phase
CG . . . Carrier gas (chromatography)
. *By process involved, separation mechanism*
* For electrochromatography, see C9Q H.
D . . Adsorption chromatography
D7Q G . . . Activation
E . . Partition chromatography (general)
* See also gas-liquid chromatography C9Q K
EL . . . Liquid phase (chromatography)
EN . . . Bonded reverse phase
F . . Ion exchange chromatography
* See also specific mobile phases; eg gas chromatography C9Q J; gel permeation chromatography C9Q G.
. . . *Agents*
FAR . . . . Ion exchange resins (chromatography)
FAS . . . . . Anionic exchange resins
FAT . . . . . Cationic exchange resins
FS . . Molecular sieve chromatography
FX . . Permeation chromatography
G . . . Gel permeation chromatography, ion exclusion chromatography, gel filtration chromatography
H . . Electrochromatographic analysis
HT . . . Zone electrophoresis
. *By other physical processes*
IC . . Precipitation chromatography

Chemistry C
Analysis C9
Kinds of analysis by separation of components in mixture
. . . By other physical processes
. . . . Precipitation chromatography C9Q IC

. . . . *By physical state of mobile phase*
C9Q IX . . . . . Multiphase chromatography
J . . . . . Gas chromatography
K . . . . . Gas-liquid chromatography
* If distinguished from gas chromatography in general.
L . . . . . Gas-solid chromatography
M . . . . . Liquid chromatography
N . . . . . High performance liquid chromatography, high pressure liquid chromatography, HPLC
O . . . . . Liquid-liquid chromatography
P . . . . . Liquid-solid chromatography
Q . . . . . Column chromatography
QX . . . . . Film development chromatography, film chromatography
S . . . . . Paper chromatography
SS . . . . . Ascending paper chromatography
SV . . . . . Descending paper chromatography
SX . . . . . Cellulose chromatography
T . . . . . Thin-layer chromatography
TT . . . . . Two-dimensional chromatography
. . . *By chemical process*
UD . . . . Redox chromatography
UG . . . . Ligand chromatography
UJ . . . . Affinity chromatography
UL . . . . Chelation chromatography

Kinds of analysis by primary purpose

* Many analytical techniques can serve the purposes of both qualitative & quantitative analysis. So the literature here will consist mostly of general works on the two types. They should be qualified here by a particular technique only if that technique is considered solely in relation to one or the other specific purpose.

V . Qualitative analysis, detection (analysis)
. . Properties to be determined
VVC . . . Composition (determination)
VVG . . . . Main constituent, purity (determination)
VVI . . . . Impurities (analysis)
VVL . . . . . Inorganic impurities (analysis)
VVO . . . . . Organic impurities (analysis)
VW . . . . Water constituent (determination)
VWX . . . . . Residual water (determination)
. . . . *By solubility*
VXB . . . . . Soluble constituents
VXD . . . . . Water-soluble constituents
VXF . . . . . Soluble in other liquids
VXI . . . . . Insoluble constituents
VXJ . . . . . Water-insoluble constituents
VXL . . . . . Insoluble in other liquids
VXV . . . Degree of advancement of reaction

Physical chemistry

Chemistry C
Analysis C9
Kinds of analysis by primary purpose
. Qualitative analysis C9Q V
. . . Degree of advancement of reaction C9Q VXV

C9Q W . Quantitative analysis, estimation (analysis)
* The two major techniques are gravimetric (C9D) and volumetric (C9D V).

C9S *Kinds of analysis by substance analyzed*
* The preferred arrangement is to subordinate the analysis of a specific substance to that substance. In such cases, use this class only as a qualifier.
* An alternative (not recommended) for libraries wishing to keep together all the literature on analysis is to use this position for that purpose. If this option is taken, proceed as follows:

. Analysis of a particular substance
* Add to C9S letters JT/N following C (for inorganic substances);
* Add to C9S letters OIX/S following C (for organic substances);
* Add to the resulting classmark numbers & letters 92/9Q following C for the analytical methods, etc.

. Determination of one substance in another
* Cite the substance analyzed before the constituent(s) determined. Proceed as follows (where the hyphen represents the classmark of the first substance):
* Add to - letters JT/N following C (for inorganic substances) or letters OIX/S following C (for organic substances); eg Determination of sulphur in iron C9S NOM Q.

Chemistry C
Common properties C33
. . . Determination of one substance in another

CA Physical chemistry, physics of chemistry
* Study of the underlying physical processes associated with chemical reactions and of the dependence of physical properties on chemical composition.
* Add to CA numbers 2/9 following C; eg,

CA3 4CV . Quantum theory
6 . Practical physical chemistry
CA9 V . Common properties/processes
XA . . Conditions, parameters, environments
YG . . . Systems characteristics
. *Properties/processes in physical chemistry*
* Where a physical property or process has generated a chemical system (eg, thermochemistry, electrochemistry) the class for that system should take all the literature relating to chemical phenomena within that system (eg, electroysis). Qualification by this class (physical chemistry) should only be used if the scope of the energy system class in CE does not embrace the concept implied by the qualifier.
* Use the classes in CAB below only to qualify classes CAC/CAY; for classes following CB, use the provision at CB.
* Add to CAB letters A/Q following B with the adjustments at CAB R as indicated; eg

CAB AG . . Thermodynamics
AT . . . Transport processes
AV . . . . Diffusion
B . . Mechanics
BB . . . Energy
* The energy forms from Physics (BA/BQ) apply mostly to reaction chemistry (CAX) rather than to physical chemistry in general.
* Use this class CAB only to qualify classes CAC/CAY; for classes following CB, use the provision at CB.
* For energy levels, see CAD; for energy bands, see CAF.

BC . . . . Energy ranges
BJ . . . . Pressure (physical chemistry)
CH . . . Statics
* For chemical statics, see CBC H.

CJ . . . . Mass (physical chemistry)
CL . . . . Density (physical chemistry)
CLL . . . . . Specific gravity
CLP . . . . . Low density
CLT . . . . . High density
CN . . . . Equilibrium
CP . . . . Stability
CX . . . Dynamics (physical chemistry)
DE . . . Kinetics (physical chemistry)
E . . . Vibration (physical chemistry)
GH . . . . Acoustic properties (physical chemistry)
GP . . Thermal properties (physical chemistry)
GV . . . Temperature (physical chemistry)

Chemical combination & structure

Chemistry C
Physical chemistry CA
Thermal properties CAB GP
. Temperature CAB GV

CAB GY Electrical & magnetic properties
HI . Electrical properties (physical chemistry)
HU . . Conduction
HWG . . Insulation
J . Magnetic properties (physical properties)
K . Radiation properties (physical chemistry)
* For radioactivity, see CAB OFK.
L . . Optical properties (physical chemistry)
M Particle physics in chemistry
NP . Electrons in chemistry
NU . Nucleons in chemistry
NV . . Protons in chemistry
NW . . Neutrons in chemistry
O . Nuclear physics in chemistry
* See also Nuclear chemistry CEV
OFK . . Radioactivity
P . Atomic physics in chemistry
* Whereas atoms in physics refer only to the internal energy aspects of the atom, in chemistry they are concerned with the general relations of atom to atom in the formulation of chemical species or substances.
PV . . Nuclides
PW . . . Isotopy
PX . . . . Radioisotopes, radioactive isotopes
* For radioisotopic elements, see CGE BPW.
PXR . . . . Stable isotopes
PXU . . . . Radioactive series, decay series, disintegration series, transformation series
PXV . . . . . Thorium series
PXW . . . . . Uranium 235 series, actinium series
PXX . . . . . Uranium-radium series
PXY . . . . . Neptunium series
Q . Molecular physics in chemistry
R . Ion physics in chemistry
* The notation at BQU is amended here.
* For free ions, see CGF Y
* For free radicals, see CGF Y
* Add to CAB letters RHU/UH following BQU; eg,
RHU . . Cations, positive ions
RHV . . Anions, negative ions
RJ . . Complex ions
VF . . Free ions
* See Free radicals, free ions CGF Y
Z . . Zwitterions

Chemistry C
Physical chemistry CA
Properties/processes in physical chemistry
. . . Zwitterions CAB Z

CAC Chemical combination & structure
F . Chemical formulae
G . . Empirical formulae
H . . Structural formulae
* See also Stereochemistry CAP
I . . Graphical formulae
K . Mole concept
L . . Avogadro's constant
M . . Molarity
O . Stoichiometry
* Determination of the numerical relationship of elements and compounds as reactants and products in chemical reactions.
* See also Stoichiometric and non-stoichiometric compounds CGH GCC O/CGH GCC V
O2M . . Stoichiometric equation
P . . Atomic weight
Q . . Atomic volume
R . . Molecular weight
S . . Chemical equivalents, equivalent weights, combining weights
CAD . Energy levels, electron energy states
* Add to CA letters D/F following BMB Particles, amplified from BPB Atoms, BQB Molecules and BTX B Condensed matter.
T . . Orbitals, orbits, electronic configuration
* For elements defined by electronic configuration, see Periodic table CGE P.
TV . . Quantum numbers (orbitals)
U . . . Principal quantum number (n), electron shells
V . . . Azimuthal quantum numbers (l), orbital quantum number, angular momentum quantum number, subsidiary quantum number
VT . . . . Electron subshells
VU . . . . . S-level, sharp level (subshells)
VV . . . . . P-level, principal level (subshells)
VW . . . . . D-level, diffuse level (subshells)
VX . . . . . F-level, fundamental level (subshells)
W . . . Magnetic quantum number (m)
X . . . Spin quantum number (s)
. . *Kinds of energy states*
CAE G . . . Ground state
H . . . . Aufbau principle
I . . . . Pauli exclusion principle
J . . . . Jund's rule
K . . . Excited state
CAF . . Energy bands
O . . . Valency bands
* For valency bonds, see CAG.

Chemical bonds

Chemistry C
Physical chemistry CA
Chemical combination & structure CAC
Energy levels CAD
. . Valency bands CAF O

CAG Chemical bonds, bonding, valence bonds
DT . Orbitals
* For bonding orbitals, see CAI H.
. *Properties*
H . . Valency, valence
J . . Oxidation state, oxidation number
L . . Electronegativity
* Measure of the tendency of an atom in a molecule to attract electrons within bonds.
M . . Bond stability
MO . . . Octet principle (bonding)
MQ . . . Bond energy, binding energy, bond strength
MS . . . Bond dissociation energy
MU . . . Bond force constants
N . . Bond geometry, molecular geometry
NO . . . Bond direction, bond orientation
NQ . . . Bond angle
O . . . Bond distance, bond length
* For covalent radius, see Covalent bonds CAJ.
OP . . . . Interatomic distance
P . . . Other features of bond geometry
* Arrange A/Z; eg B-bonding.
Q . . Bond dipole moment
QR . . . Fajan's rule
T . *Processes*
V . . Orbital overlap
* See also Bond hybridization CAH N
CAH B . . Binding sites, receptors
C . . . Active sites, combining sites
D . . . Allosteric sites
E . . . Isosteric sites
F . . . Synaptic receptors
H . . Crosslinkage, crosslinking
L . . Localization (bonding), delocalization (bonding)
* Bonding electron cannot be associated with just one atom but with whole group.
LN . . . Helical structures (bonding)
LQ . . . . Alphahelix structures (bonding)
N . . . Bond hybridization, orbital hybridization
P . . . Catenation
* Tendency of the atoms of an element to form chains.
. *Components in bonding*
CAI B . . Bonding electrons, electron pairs
C . . . Valence shell electron pair repulsion, VSEPR theory
E . . . Shared pair
F . . . Lone pair
H . . Bonding orbitals (general)
P . . Atomic orbitals
PHN . . . Hybridization
PS . . . Basis set atomic orbitals

Physical chemistry CA
Chemical combination & structure CAC
Chemical bonds CAG
Components in bonding
. Atomic orbitals CAI P
. . Basis set atomic orbitals CAI PS

CAI Q . Molecular orbitals
QGV . . Overlap
QHN . . Hybridization
QR . . Bonding orbitals (molecular), bonding molecular orbitals
QS . . Anti-bonding molecular orbitals
Kinds of bonds
CAJ . Covalent bonds
. . *Properties & Processes*
K . . . Covalency
L . . . Ionic character, charge distribution
N . . . Bond energy
O . . . Bond order
Q . . . . Conjugation
* Alternation of single & multiple bonds.
R . . . . . Hyperconjugation
. . *Kinds of covalent bonds*
CAK . . . Coordinate bonds, dative bonds, semipolar bonds
* Formally identical with covalent bonds, but with both electrons being supplied by one of the atoms.
* For chelate bonding, see Chelates CIM.
L . . . Localized bonds, two-centred bonds
* For localization as process, see CAH L.
M . . . Delocalized bonds, multi-centred bonds
* See also Aromatic bonds CQY AKM
N . . . Sigma bonds
* Resulting from overlap of 2 s-orbitals or of an s- & a p-orbital.
P . . . Pi bonds
* Resulting from overlap of 2 parallel p-orbitals.
Q . . . . Delocalized pi bonds
. . . *By number of bonds linked*
R . . . . Single bonds
S . . . . Multiple bonds
SKM . . . . . Delocalized multiple bonds
U . . . . . Conjugate bonds
. . . . . *Processes*
UJR . . . . . Hyperconjugation
V . . . . . Double bonds
W . . . . . Triple bonds
X . . . . . Quadruple bonds
YB . . . Polar covalent bonds
YD . . . Dipolar covalent bonds
YF . . . Nonpolar covalent bonds
CAL . Ionic bonds, electrovalent bonds, electrovalency
. . *Properties*
. . . Covalency
JK . . . . Covalent properties in ionic bonds
N . Resonance hybrids
* For resonance in general, see Mesomerism CGH GCS UQH.

Physical chemistry

Chemistry C
Physical chemistry CA
Chemical combination & structure CAC
Chemical bonds CAG
. . Resonance hybrids CAL N

CAL P . . Vibrational bonding
Q . . Metallic bonds, free electrons (metallic bond)
R . . . Metal cluster bonds
S . . Electrostatic bonds
T . . . Hydrogen bonds
U . . Hydrogen bridges
CAM . . Intermolecular forces
CAN . . . Van der Waals' force
R . . . . Attraction (Van der Waals'), radius (Van der Waals')
S . . . London forces
T . . . Dipolar interactions, Keeson's forces
U . . . . Dipole induced dipole force
V . . . Dispersion forces
X . . . Association

CAO Molecular structure, structural chemistry
P . Molecular shape, structural topology
Q . . Chain structure (general)
* Most of the literature concerns organic compounds.
* For Aliphatic compounds, see CP.
R . . . Open chain
S . . . . Straight chain
U . . . . Branched chain
V . . . . . Cross-linking
W . . . Closed chain, ring structure, cyclic structure
* Nearly all the literature is on cyclic organic compounds (CQ/CS).
X . Structural features special to a particular class
* The classmark -AOX may be added to any class to introduce a special structural feature; see, eg, base sequence (nucleic acids) CVH AOX; miscelles in disperse systems CFN TAO XM.
CAP . Stereochemistry
* Study of the spatial arrangement of atoms within molecule, & the physical & chemical consequences of this.
* For stereoisomerism narrowly, see CAT.
. . Theory
34F . . . Conformational analysis
. . *Structural properties*
P . . . Arrangement (molecular structure), configuration (molecular structure)
S . . . Symmetry
SQ . . . . Plane of symmetry
SR . . . . N-fold axis of symmetry
SS . . . . Centre of inversion (symmetry)
T . . . . . Reflection symmetry
U . . . Asymmetry, disymmetry
V . Structures special to a given compound
* Notation reserved for use when required; eg, primary, secondary, etc. structures in polymers CTE APV.

Chemistry C
Physical chemistry CA
Chemical combination & structure CAC
. . Structures special to a given compound CAP V

CAP Y . . Variations in molecular structure
* For the kinds of substances produced by these (ie, polymorphs) and their attendant processes (polymorphism, allotropy, etc) see CGC Q (general), CGE CQ (elements) and CGH GCQ (compounds).
* For isomerism, see CGH GCR QH; for polymerization, see CGH GCV CQ; for isomorphism, see CGH GCW.

CAY Reaction chemistry
* For chemical combination & structure, see CBR.
9 . Chemical analysis
. Conditions, parameters
* Use these only for the qualification of particular reactions. Works on the concepts per se go at the appropriate class in CBB/CE below; eg Adiabatic processes in thermochemistry CDU BAP Q.
9XC . . Critical point
9XE . . Volume conditions
9XJ . . Pressure conditions
9XO . . Velocity conditions
9XP . . Thermal conditions
9XY . . Electrical & magnetic conditions
9YB . . Dimensions
9YC . . . Time conditions
G . Agents special to a particular class
* The classmark -AYG may be added to any class to introduce agents special to it; eg CTE CQA YG Polymerization intermediates.

CB . Physics of reactions
* Add to CB numbers & letters 9/Q following B; eg
CBA G . . Thermodynamics of reactions, chemical energetics
* For thermochemistry, see CDU.
H . . . Thermodynamic laws
J . . . . Conservation of energy
K . . . . . Enthalpy
M . . . . Entropy
PN . . . Free energy
PP . . . Chemical potential
PR . . . Adiabatic processes
T . . . Transport processes
V . . . . Diffusion
* For osmosis, see CFM EW.
VG . . . . . Homogeneous diffusion
VH . . . . . Heterogeneous diffusion
VL . . . . . Linear diffusion, one-dimensional diffusion
VM . . . . . Two-dimensional diffusion
VR . . . . . Rotational diffusion
VS . . . . . Surface diffusion
VT . . . . . Charge-carrier diffusion, conjugate diffusion

Mechanics of reactions

Chemistry C
Physical chemistry CA
Reaction chemistry CAY
Physics of reactions CB
Thermodynamics of reactions CBA G
. . . Charge-carrier diffusion CBA VT

CBB Mechanics of reactions
- 34C V . Quantum theory
- 9YB . Dimensions
- 9YD F . . Linear
- 9YD G . . . Distance (reaction mechanics)
- 9YD PR . . Area (reaction mechanics)
- 9YD S . . Volume (reaction mechanics)
- 9YD S9X C . . . Critical volume (reaction mechanics)
- B . Energy (reactions)
- B92 D . . Distribution
- BP . . Potential energy (reactions)
- BT . . Kinetic energy (reactions)
- BV . . Internal energy
- G . . Forces (reactions)
- IM . . Momentum (reactions)
- J . . Pressure (reactions)

CBC H . Statics (chemical reactions)
- J . . Mass (reactions)
- JAH . . . Law of mass action
- JAT . . . Mass transfer
- JK . . . Active mass
- L . . Density (reactions)
- N . . Equilibrium (reactions)
  * For equilibrium in change of state, see CFF T.
- N9V G . . . Equilibrium constant, law of mass action
- OR . . . Forward & reverse reactions, degrees of reaction
- OT . . . Reaction extent, reaction quotient
- P . . Stability (chemical reactions)
- S . Motion
- U . . Momentum (reactions)
- X . Dynamics

CBD A . . Kinematics of reactions
- C . . . Velocity (reactions)
  * For law of mass action, see CBC JAH.
- D . . . . Acceleration (reactions)
- E . . . Kinetics of reactions, rate of reaction
  * Study of the rates at which reactions proceed and the influence of factors such as temperature, pressure, concentration of reactants, etc. on rate.
- E34 DA . . . . Arrhenius rate law
  * Represents variation of rate with temperature.
- E34 DE . . . . Ehring rate law
- . . . . Constants
- E9V G . . . . . Rate constant, specific reaction rate, velocity constant, speed of reaction

Chemistry C
Physical chemistry CA
Reaction chemistry CAY
Physics of reactions CB
. . . Kinematics of reactions CBD A
. . . . . Rate constant CBD E9V G

. . . Energy components

CBD F . . . . Reaction path, reaction stages
  * Representation of energy relationships of reaction.
- FG . . . . . Primary stage (reactions), one-stage reactions
- FJ . . . . . Energy transfer (reaction stage)
- FK . . . . . Intramolecular transfer (reaction stage)
- FL . . . . . Intermolecular transfer (reaction stage)
- FN . . . . . Excitation (reaction stage), activation (reaction stage)
- FR . . . . . Relaxation (reaction stage), deactivation (reaction stage)
- G . . . . Activation energy, reactivity
  * See also Induction CBS F
- GAK . . . . . Enthalpy of activation
- GAM . . . . . Entropy of activation
- H . . . . Activated complex, activated state, transition complex
  * Excited state intermediate between reactant and product.
- H32 . . . . . Transition state theory (reactions)
- HJ . . . . Molecularity
  * See also Order of reaction CBD I
- HK . . . . . Unimolecular reactions, monomolecularity
- HL . . . . . Bimolecular reactions, bimolecularity
- HM . . . . . Termolecularity
- HP . . . . Free energy change
- I . . . . Order of reaction
  * Sum of the powers of concentrations determining the kinetics and rate of a reaction.
- IF . . . . . Overall order of reactions
- IH . . . . . Zero order reaction
- IJ . . . . . Half-order reaction
- IK . . . . . First order reaction
- IL . . . . . Pseudo-first order reaction
- IN . . . . . Second order reaction
- IP . . . . . Higher order reactions
- IR . . . . Reaction zone, reaction front
- IS . . . . Reaction yield

CBR Chemical combination & structure
  * See also Stoichiometry CAC O

CBS *Properties/processes special to reactions*
- 9VE S . Spontaneous processes
- 9YC H . Instantaneous processes
- E . Reversion (reactions)
  * To previous state.
- F . Inductive effect (reactions), induction
- G . . Reactivation

Reaction chemistry

Chemistry C
Physical chemistry CA
Reaction chemistry CAY
Properties/processes special to reactions CBS
. Inductive effect CBS F
. . Reactivation CBS G

CBS H . Repression
I . . Inhibition
K . . Reversion
L . Irreversibility
Special components in reactions
Q . Symmetry control in reactions
R . . Orbital symmetry reactions
S . . Concerted reactions, unconcerted reactions
U . Molecular collisions
CBX . Precursors
* Compounds which lead to another in a reaction; inactive substances which are converted to active ones.
CBY M . Modifiers
* Used mainly in technology to produce particular properties in a process or substance.
CCA . Catalysis, catalysts
. . *Operations on catalysts*
G . . . Catalyst carrier
H . . . Catalyst stripping
I . . . Poisoning of catalysts, anti-catalysis
J . . . Regeneration of catalysts
. . *Parts of catalysts*
L . . . Action centre (catalysts)
. . *Kinds of catalysis & catalysts*
. . . *By physical location*
N . . . . Fixed catalysts
O . . . . Mobile catalysts
. . . *By phase conditions*
P . . . . Homogeneous catalysis
* Catalyst and reactor are in the same phase.
PS . . . . . Acid-base catalysts
Q . . . . Heterogeneous catalysts
* Catalyst and reactor are in different phases.
. . . *By effect on composition*
R . . . . Physical catalysts
* Add to CCA R letters A/W following B; eg
RBJ . . . . . Pressure catalysts
S . . . . Chemical catalysts
* Usually assumed.
* For reaction product as catalyst, see autocatalysis CCA U.
* See also Enzymes CUL
TB . . . . . Mixed catalysts
. . . . . Particular substances
TH . . . . . Water (as catalyst), hydrolysis
TJ . . . . . Others
* Add to CCA T letters J/S following C for general substances.
* Add to CCA T letters T/Y for catalysts in a special context; eg Peptidases CUF CAT T.

Chemistry C
Physical chemistry CA
Reaction chemistry CAY
Special components in reactions
. . . By effect on composition
. . . . . Others CCA TJ

. . . *By specific function*
. . . . *By object of action*
CCA U . . . . . Autocatalysis
* Reaction products catalyze further reactions.
V . . . . . Substrate (catalysis)
W . . . . . Promotion (catalysis), promoters (catalysis), activation (catalysis), activators (catalysis)
X . . . . . Acceleration (catalysis), accelerators (catalysis)
Y . . . . . Retardation (catalysis), retarders (catalysis), inhibition (catalysis), inhibitors (catalysis), negative catalysis
YD . . . . . Stabilizing (catalysis)
CCB . . . . *By process assisted*
* See process (e.g. hydrogenation, polymerization).

Kinds of reactions
* For interactions with non-chemical forms of energy, see CDS/CEV (eg, CE Elecrochemistry).
* Non-chemical reactions defined by the states of matter concerned go with states of matter; eg homogeneous reactions CFL AY.
CCC . *By name*
* Named reactions should go with the type of reaction so far as possible; eg, Friedel-Crafts reaction goes under Aromatic hydrocarbons - Synthesis - Friedel-Crafts reaction CQY CPB CC.
. *By reversibility*
CCD B . . Reversible reactions
C . . . Van't Hoff's reaction isotherm
E . . Irreversible reactions
. *By status of reaction*
F . . Parallel reactions, competing reactions
G . . . Main reaction
H . . . Side reaction
. *By direction & energy of reaction*
J . . One-stage reactions, elementary reactions
JF . . . Reaction cross-section
JH . . . Reaction coordinate
JL . . . Molecular collisions, molecular scattering
K . . Multistage reactions, complex reactions
L . . Chain reactions
M . . Clock reactions
MF . . . Periodic reactions, oscillatory reactions
MH . . . . Belousov-Zhabotinskii reaction, B-Z reaction, chaos reactions
N . . Fast reaction
O . . Explosion

Reaction chemistry

Chemistry C
Physical chemistry CA
Reaction chemistry CAY
By direction & energy of reaction
. Explosion CCD O

By dependency of reaction

CCD Q . Endogenic reactions
* For spontaneous reactions see CBS 9VE S.

R . Exogenic reactions

By bond broken

* A reaction is most meaningfully described by indicating (1) the bond formed (2) the way this is done (the type of reaction proper) & (3) the bond broken.
* This class allows for general works on reactions specified by the bond broken. For general works on reactions specified by the bond formed, see CCO.

CCH C . Heterolytic cleavage
* Breaks bonds to give opposing ions.

E . . Nucleophilic reactions

H . . Electrophilic reactions

CCK . Hydrogen bond broken

CCL M . Carbon bond broken

S . Nitrogen bond broken

CCM . Oxygen bond broken

Q . Sulphur bond broken

By bond formed

* Add to CCO letters JT/N following C.

By relation to reaction product

CCO T . Unwanted process/product reactions

. When product is from simpler units

Y . . Naturally produced
* Use when opposed to synthetic; eg, CTE HGD COY Natural polymers.

CCP B . . Formation, synthesis (reaction mechanism)

BS . . . Asymmetric synthesis

D . . Combination, fusion (reaction mechanism)
* For fusion as a change of state, see CFV GN.

F . . . Recombination reactions

H . . Addition, attachment
* See also Nucleophylic reactions CCH E; Redox reactions CDB

J . . Association
* When similar molecules form complex groups; eg water.

L . . Condensation
* For substitution reactions, see CCW.

CCQ . . Polymerization
* For polymers as types of compounds, see CGH GCV (for general works); CHG CV (for general works on inorganic polymers); CTE (for organic polymers).

S . . . Telomerization
* Very low molecular weight polymerization.

. When product is from more complex units

CCV . . Decomposition, breakdown
* For double decomposition, see Exchange reactions CCW CHP.

CA . . . Catalytic decomposition

Chemistry C
Physical chemistry CA
Reaction chemistry CAY
When product is from more complex units
. . Catalytic decomposition CCV CA

. . *By form of decomposition*

CCV F . . . Fission (decomposition)

G . . . Graded decomposition

I . . . Continuous decomposition

K . . . Discontinuous decomposition

N . . . Degradation
* Conversion of an organic compound to one containing a smaller number of C atoms.

P . . . Dissociation

R . . . Elimination

By product of change

T . Rearrangement reactions, disproportionation
* A nuclear reaction, in which nucleons are exchanged between nuclei.

CCW . Substitution, replacement
* Replacement of an atom or radical by another one in a compound.

CHE . . Nucleophilic substitution

CHH . . Electrophilic substitution

. . *By mode of substitution*

CHN P . . . Double replacement

CHN Q . . . . Exchange reactions
* The atoms or ions exchange places either in two different molecules or in the same molecule.

CHP . . . . . Double decomposition, metathesis, metathetical reaction
* Reaction of the type AX + BY > AY + BX.

. . *Kinds of polysubtitution by position*
* Applicable only to ring structures.

JC . . . Ortho substituted

JE . . . Meta substituted

JG . . . Para substituted

JJ . . . Vicinal substituted

JL . . . Assymetric substituted

JN . . . Symmetric substituted

. . *By specific number substituted*

M . . . Monosubstitution

N . . . Polysubstitution

P . . . . Disubstitution

R . . . . Trisubstitution

T . . . . Tetrasubstitution

V . . . . Pentasubstitution

W . . . . Hexasubstitution

X . . . . More than six

. *Kinds of substitution by agency*

CDA . . Ion exchange

F . . . Ion exchange resins, ion exchangers

H . . . . Regeneration

N . . Anion exchange

P . . Cation exchange

Reaction chemistry

Physical chemistry CA
Reaction chemistry CAY
By relation to reaction product
. By product of change
. . Kinds of substitution by agency
. . . Cation exchange CDA P

CDA S . . . Ion association
X . . Isotope exchange reaction
. *By electron transfer*
CDB . . Redox reactions, oxidation-reduction reactions
HL . . . Redox potential
CDC . . . Reduction, de-oxidation, hydrogenation
CDD . . . Oxidation, de-hydrogenation
. *By rearrangement of components*
CDG . . Isomerization
. . . *By ring structure*
H . . . . Ring opening
J . . . . Ring closing
By reaction product
CDH . *By resulting state of matter*
* The preferred arrangement is to subordinate reactions like solidification, solvation, etc. to the state produced (see CF).
* Should the need arise for this type of reaction to be cited in other contexts, this position may be used, as follows:
* Add to CDH letters GY/W following CF; eg,
H . . Surface reaction products
M . . Solutions
T . . Gasification
U . . Liquefaction
V . . Solidification
W . . . Crystallization
. *By resulting type of compound*
* Add to CD letters IA/N following C; eg
YN . . Neutralization
CDI A . . Acidification
C . . Basification
K . . Hydration
CDL M . . Carbonization
S . . Nitrogenation
CDM . . Oxygenation
* For redox reactions, see CDB.
CDP Reactions special to a subject
* This notation is reserved for use under the subjects concerned; eg, CJT DP Metal compounds - Corrosion.

Chemistry C
Physical chemistry CA
Reaction chemistry CAY
Reactions special to a subject CDP

Reactions by change in energy system
CDS . Mechanochemistry
* Conversion of mechanical energy into chemical energy
* See also Polymers CGV
G . . Sonochemistry

CDU . Thermochemistry
* Studies changes of heat accompanying chemical reactions and changes of state.
. . Conditions, parameters
9XC . . . Critical state, critical point phenomena
9YB . . Dimensions
BAG . . Thermodynamics
BAH . . . Laws of thermodynamics
BAK . . . . Enthalpy
BAM . . . . Entropy
BAP D . . . Equilibrium thermodynamics
. . . Internal energy
BAP J . . . . Thermal energy (internal energy)
. . . Free energy
BAP N . . . . Thermal potential, Gibbs' function
BAP Q . . . Adiabatic processes
. . Catalysis
CA . . . Catalytic thermal reactions, thermolysis
. . *Thermal processes & properties*
* Add to CDU G letters Q/S following BRG P;
* Add to CDU letters Q/X following BRG; eg
GQ . . . Heat of reaction
* For heat associated with particlar reactions, see reaction; eg CDV L Heat of decomposition
GR . . . . Heat capacity, thermal capacity
. . . . . Measurement
GR7 6 . . . . . Calorimetry
GS . . . . . Specific heat capacity
GT . . . . . Molar heat capacity
GU . . . . . Dulong & Petit's law
. . . . Special to thermochemistry
L . . . . . Latent heat of reaction (thermochemistry)
* Usually defined as heat absorbed or evolved during a change of physical state; see also change of state CF.
Q . . . . Heat transfer
T . . . . . Heat loss, cooling
U . . . . . Heat gain, heating
V . . . Temperature
V78 LT . . . . Absolute temperature
V92 H . . . . Variations (temperature), gradients (temperature)
VN . . . . Temperature inversion
VR . . . . Normal temperature
VS . . . . Critical temperature

Electrochemistry

Chemistry C
Physical chemistry CA
Reaction chemistry CAY
Thermochemistry CDU
. Thermal processes & properties
. . . Critical temperature CDU VS

CDU VW . . . Low temperature
VX . . . High temperature
. . . Temperature regimes
W . . . . Low temperature regimes
X . . . . High temperature regimes
. *Thermal reaction processes*
* Each reaction may be qualified as follows (where the hyphen represents its classmark):
* Add to - letters A/DM following C;
* Add to -E letters G/X following CDU;
* Add to -F letters E/V following CDV if applicable; eg

CDV E . . Endothermic reactions
F . . Exothermic reactions
H . . Heat of formation, enthalpy of formation
HEL . . . Latent heat of formation
HH . . . Standard heat of formation
J . . Heat of combination, heat of fusion
L . . Heat of decomposition
M . . . Heat of dissociation
MEL . . . . Latent heat of dissociation
N . . . Heat of atomization
P . . Combustion chemistry
. . . *Properties*
QF . . . . Flammability
QG . . . . Flash point
. . . *Processes*
QJ . . . . Ignition
QK . . . . Flames
QL . . . . Explosion
. . . *Kinds of combustion*
S . . . . Catalytic combustion, flameless combustion
. . . *Products*
V . . . . Residue of combustion, ash

CE Electrochemistry, electrochemical reactions
* Processes involved in interconversion of electrical energy & chemical energy. Seen in the use of a chemical reaction to produce an electric current, or the use of an electric current to produce a chemical change, Sometimes restricted to the latter meaning.
* For redox reactions, see CDB.
* Add to CE letters A/DM following C with the adjustments indicated below.

CE3 U . Equipment
* For containment equipment, see CED Y3U.

CEB . Physical processes/properties
FP . Electrochemical polarization
FPQ . Electrochemical depolarization

CEC A . Catalysis

Chemistry C
Physical chemistry CA
Reaction chemistry CAY
Electrochemistry CE
Catalysis CEC A

CED Q Electromagnetic properties
* Add to CED Q letters A/Y following BVH; eg
QK . Charge (electrochemistry)
QL . Voltage (electrochemistry), potential difference (electrochemistry)
QLX . Capacitance (electrochemistry)
QMC . Power (electrochemistry)
QN . Electrostatics (electrochemistry)
QO . Electrodynamics (electrochemistry)
QP . . Current (electrochemistry)
QS . . . Circuits (electrochemistry)
QTY . . . . Conductance (electrochemistry)
QU . . . . Conduction (electrochemistry)
QWB . . . . Resistance (electrochemistry), insulation (electrochemistry)
S . . . . Semiconductors (electrochemistry)
* Add to CED SA letters A/D following C.
* Add to CED S letters B/V following BVI.
W Electrochemical procedures
Y . Containment
. . Equipment
Y3U . . . Containment equipment, housing

CEE . . . Electrochemical cells
CEF . . . . Electrodes
BAT . . . . . Transport processes
. . . . . Charge
DQK . . . . . Charge transfer (electrodes)
DQL . . . . . Electrode potential
* For oxidation-reduction potential, see CDB HL.
DV . . . . . Erosion of electrode
E . . . . . Materials of electrodes
. . . . . *Kinds of electrodes by composition*
G . . . . . Non-metallic electrodes
H . . . . . Metallic electrodes
J . . . . . Mercury electrodes
K . . . . . *Kinds of electrodes by construction*
* Arrange A/Z; eg
KD . . . . . Dropping electrodes
. . . . . *Kinds of electrodes by physical state*
L . . . . . Solid electrodes
. . . . . *Kinds of electrodes by charge*
N . . . . . Anode (electrochemistry)
P . . . . . Cathode (electrochemistry)
T . . . . Membranes (electrochemical cells)
V . . . . Diaphragms (electrochemical cells)

Electrochemistry

Physical chemistry CA
Reaction chemistry CAY
Electrochemistry CE
Electrochemical procedures CED W
. Containment CED Y
. . . . Diaphragms CEF V

CEF X . Materials of electrochemical equipment (By chemical constitution)
* Add to CEF X letters J/N following C; eg Gallium CEF XLH.
CEG . . Electrolytes, electrolytic solutions
* Any compound in solution (or a molten state) which conducts a current & is decomposed by it.
BAT . . . Transport
BFP . . . Polarization
DQT X . . . Conductance
. . . *Subsystems*
I . . . . Electrode-electrolyte interface
IL . . . . . Double electrolayer
IP . . . . . Electrocapillary phenomena (electrolytes)
. . . *Kinds of electrolytes by dissociation factor*
J . . . . Symmetric electrolytes
K . . . . Asymmetric electrolytes
. . . *Kinds of electrolytes by conductance factor*
P . . . . Electronic conductance electrolytes
Q . . . . Protonic conductance electrolytes
R . . . . Ionic conductance electrolytes
S . . . . Mixed conductance electrolytes
. . . *Kinds of electrolytes by physical state*
T . . . . Gaseous electrolytes
U . . . . Liquid electrolytes
V . . . . . Aqueous solutions
* Add to CEG V letters B/U following CFM so far as applicable; eg
VBK JX . . . . . Hydrogen ion concentration, pH
VBK K . . . . . Buffers (pH)
W . . . . . Non-aqueous solutions
WM . . . . . Molten salts
X . . . . Solid electrolytes
. . . *Kinds of electrolytes by composition*
CEH A . . . . Organic electrolytes
B . . . . Polyelectrolytes, polymeric electrolytes
Kinds of electrochemical reactions
* See also Redox reactions CDB
* Add to CEH C letters A/Y following CC;
* Add to CEH D letters A/V following CD.
CEJ . Electrolysis
* Decomposition or dissociation of an electrolyte by an electric current.
* For polarization, see CEJ F.
DQP . . Current
DQQ . . . Applied voltage (electrolysis)
DQU . . . . Electrolytic conduction, electrolytic conductivity
. . . Particular processes
F . . . . Polarization (electrolysis), depolarization (electrolysis)

Physical chemistry CA
Reaction chemistry CAY
Electrochemistry CE
Electrolysis CEJ
. Current CEJ DQP
. . . Polarization CEJ F

CEJ G . . . Electrolytic dissociation
H . . . Deposition (electrolysis)
. Products
N . . Ions (product of electrolysis)
NT . . . Transference number
P . . Primary products (electrolysis)
R . . Secondary products (electrolysis)
CEK . . Electrical output electrolysis
* Strictly, electrolysis always yields both electrical and chemical outputs. But the cells are designed to produce a preferred level of one over the other and this preference defines the two classes here.
E . . . Electrochemical cells, voltaic cells, galvanic cells
K . . . . Batteries, electric cells (batteries)
* Used, often indiscriminately, to denote cells. Here, denotes only joined up single cells. Other possible definitions are designated as "cells".
. . . . *Kinds of cells by electrode arrangement*
L . . . . . Bipolar cells
M . . . . . Membraneous cells
N . . . . . Diaphragm cells
P . . . . Half cells
Q . . . . . Liquid junction
R . . . . . Salt bridge
S . . . . Dry cells
T . . . . Wet cells
CEL B . . . . Primary cells, non-reversible cells
C . . . . . Standard cells
D . . . . . Weston cell
E . . . . . Concentration cells
G . . . . . Daniell cell
L . . . . . Leclanche cell
M . . . . . Mercury cell
P . . . . Secondary cells, reversible cells
Q . . . . . Secondary batteries
U . . . . Fuel cells
W . . . . Hybrid cells
CEM . . Chemical output electrolysis
CEN . . . Electrolytic cells
* This term is generally used for chemical output cells.
DQL . . . . Electrolytic cell e.m.f.
CEP J Electroosmosis
K Electrophoresis, cataphoresis
L Electrodialysis
M Electrosynthesis

Photochemistry

Chemistry C
Physical chemistry CA
Reaction chemistry CAY
Electrochemistry CE
. . Electrosynthesis CEP M

CEQ Magnetochemistry
* Magnetic changes accompanying chemical reactions.
* See also Transition metal compounds CNA
. Experimental techniques
7IO . . Nuclear magnetic resonance
7IP . . Electron magnetic resonance
. *Properties & processes*
* Add to CEQ F letters B/F following BVJ
* Add to CEQ letters J/U following BVJ; eg
KS . . Magnetic susceptibility
KV . . Magnetic purity
. Magnetic behaviour
Q . . Diamagnetism
R . . Paramagnetism
S . . . Ferromagnetism

CER Radiation chemistry
* Study of radiation-induced chemical changes.

CES . Photochemistry, photochemical reactions
* Study of chemical processes initiated by light (or, more generally, by electromagnetic radiation) and the direct production of radiation by chemical change.
* See also Chemiluminescence BRL FHT C
3U . . Equipment
3WC . . . Light sources (equipment)
3WE . . . . *Kinds by optical instrument*
* Add to CES 3WE letter U/X following BRL 4 if applicable.
3WF . . . . *Kinds by properties & kinds of light*
* Add to CES 3W letters F/W following BRL if applicable; eg
3WF GQ . . . . . Incandescent sources
3WQ N . . . . Natural light sources (photochemistry), solar light (photochemistry)
. . Imaging
7I . . . Sensitometry
7M . . Spectroscope
. . Analytic techniques
9K . . . Actinometry, radiometry (photochemistry)
. . Physics
BAT . . Transport
BB . . Mechanics
BBB . . . Energy
* For wave properties, see CES F.
BDG . . . . Activation energy (photochemistry), reactivity (photochemistry)
. . Reactions
BSE . . . Reversible reactions

Physical chemistry CA
Reaction chemistry CAY
Radiation chemistry CER
Photochemistry CES
Reactions
. Reversible reactions CES BSE

CES CA . Catalysis
* Light-aided; not specifically a photochemical reaction.
CAR L . . Photosensitization
F Wave properties
* Add to CES letters F/OE following BRL in BRL F/BRL OE; eg
FCS . Photoconductivity
FGQ . Incandescence
* Emission of light as a result of thermal energy.
FH . Luminescence (photochemistry)
* Emission of light as a result of causes other then thermal energy.
FHK . . Slow luminescence
* Emission after illumination with visible or u-v light.
FHL . Fluorescence
* Absorption of other radiation & re-emission as light.
FL . Absorption phenomena (general)
L . Luminosity
M . Colour
MM . . Photochromism
Kinds of light
* Add to CES P letters P/Y following BRL; eg
PQN . Natural light
PQP . Artificial light
PU . Infra-red radiation (photochemistry)
Photochemical processes in relation to product
* Add to CES R letters O/Y following CC;
* Add to CES SA letters F/X following CDA; eg
. Formation
RPB . . Photosynthesis
. Decomposition
RV . . Photolysis, photochemical decomposition
RVF . . Photofission
RVN . . Photodegradation
RVP . . Photodissociation
RVQ . . . Photoionisation
RVR . . Photodisintegration
* Special to nuclear reactions.
RVT . Rearrangment
RVU . . Isomerization (photochemistry), intramolecular reorganization (photochemistry)
* Light-aided; not specifically a photochemical reaction.
* Distinguish from optical isomerism (optical activity of compounds). Light induced isomerism need not be of optically active compounds.
SA . Ion exchange

Mixed phase chemistry

Chemistry C
Physical chemistry CA
Reaction chemistry CAY
. . . . Photochemistry CES
. . . . . Ion exchange CES SA

CET . . . . Laser chemistry
* Reactions excited to particular energies by use of lasers.

CEU . . . . Radiochemistry
* For radioactive subtances in general, see CGB OFK; for radioactive elements in general, see CGE OFK; for radioactive compounds in general, see CGH GBO FK.
* See also ion physics in chemistry CAB R

CEV . . . . Nuclear chemistry
* The study of reactions in which new elements are produced.

Properties & processes in states of matter

CF . Mixed phase chemistry, chemical systems (phases), phases (chemical systems)
* A chemical system is a system of 1, 2 or more phases, where each phase represents a part of the system which is homogeneous (a state of matter which has the same interface (the phase boundary)).
* The order below follows that in Physics BRN/BW, but the notation has been amended in order to accommodate the expansion of some classes (eg colloids) in the context of chemistry.
* Interactions involving two phases go under the denser phase; eg both solids in liquids and liquids in solids go under solids.
* Phase changes dependent on particular phases go under the latter; eg suspensions in fluids CFS P.

. . Conditions, parameters

CF9 WB . . . Degrees of freedom (phase transformation)

WI . . . . Concentration (degrees of freedom), composition (degrees of freedom)

WJ . . . . Pressure (degrees of freedom)

WP . . . . Temperature (degrees of freedom)

CFA B . . Physics
* For the physics of change of state specifically, use CFF.

BAT . . . Transport processes
* For molecular sieves, see CFH SPS.

BCH . . . Statics
* For equilibrium, see CFF T

BCX . . . Dynamics

BDE . . . Kinetics

CFD S . . . Mechanochemistry

CFF . . *Processes in change of state*
* Add to CFF letters P/V following BRN.

R . . . Phase transition, formation of phases, phase transformation

S . . . . Latent heat

Chemistry C
Physical chemistry CA
Mixed phase chemistry CF
Processes in change of state CFF
. Phase transition CFF R
. . Latent heat CFF S

CFF T . . Phase equilibrium

T9V G . . . Equilibrium constant

T9W Q . . . Van't Hoff isotherm, standard isotherm

TP . . . Phase diagrams, equilibrium diagrams
* Showing what phases exist at different temperatures & pressures.

TR . . . Phase rule

TS . . . Reaction points

TT . . . . Triple point

CFG . Special changes of state involved
* Use this classmark only for qualification of a particular phase by a process special to it; eg vaporization under condensed state CFT XGG.

X *Kinds of mixed phase systems*
* Each system may be qualified as follows (where the hyphen represents its classmark):
* Add to - letters A/E following C;
* Add to -F letters A/O following CF as applicable (ie, retroactively).

. *By part, subsystems*
* Order as in BRQ but with notation adjusted to accommodate expansion for the chemistry.

Y . . Contact systems
* For surfaces and interfaces together.
* Most of the literature relates to surfaces.

CFH . . . Surfaces, surface chemistry, surface interaction
* Study of the forces & processes acting on the surfaces of liquids & solids, or at an interface separating two phases.
* For adhesion, see CFH M; for sorption, see CFH O; for tension, see CFH X.

. . . . *Properties & processes*
* Some of the concepts below are usually used almost entirely in connection with particular states (eg solutions, colloids) which will be cited first.

BT . . . . . Lyophily

BTJ . . . . . Lyophoby

BU . . . . . Hydrophily

BUJ . . . . . Hydrophoby (surface chemistry)

BV . . . . . Lipophily

BVJ . . . . . Lipophoby

J . . . . . Formation of surfaces

JL . . . . . Surface concentration

JS . . . . . Segregation of surface, distribution of surface
* See also Layers CFI J

KL . . . . . Capillary activity

KN . . . . . Electrocapillary activity

Contact systems

Physical chemistry CA
Mixed phase chemistry CF
Contact systems CFG Y
Surfaces CFH
Capillary activity CFH KL
. Electrocapillary activity CFH KN

CFH L Permeation
LQ . Permeability
LR . Porosity
M Adhesion, adherence to surfaces
N Lubricant action, lubricity
O Sorption (chemical)
* Inclusive term for processes in which a substance takes into itself radiation energy, gases or other substances by increasing its own energy state or by forming chemical bonds with the sorbed substance.
P . Sorbents
Q . Sorbates
* The substances sorbed.
R . Absorption
* Penetration of sorbate into body of sorbent.
S . Adsorption
* Surface retention of molecules, atoms or ions. Sorption to a surface.
SDU GQ . . Heat of adsorption
SP . . Adsorbents
SPS . . . Molecular sieves
SR . . Physical adsorption, Van der Waals' adsorption, physiosorption
ST . . . Adsorbent/adsorbate interaction
SU . . . . Retention (physical absorption)
SV . . . . Selective adsorption, preferential adsorption
SW . . . . Contact accommodation, sticking
TC . . . Coverage (adsorption), adsorption stage
TD . . . Localized adsorption, adsorption sites
TE . . . Coadsorption
TF . . . Exchange adsorption
TG . . . Displaced adsorption
TH . . . Countercurrent adsorption
TJ . . . Fixed bed adsorption
U . . Chemisorption
* Adsorption where weak chemical bonds are formed.
UV . . . Activated adsorption
UW . . . Dissociative adsorption
V . Desorption
* Reverse of adsorption.
W . Persorption
X Surface tension
XJ . Surface activity
XK . . Surfactants, surface action agents
XN . . Washing action
* See also Chemical technology VL in Class U/V
* See also Associated colloids CFO PM
XP . . . Detergents, cleaning agents
XQ . . . Soaps
Y . Wetting, spreading (wetting)
YL . . Wetting agents

Chemistry C
Physical chemistry CA
Mixed phase chemistry CF
By part, subsystems
. . Surfaces CFH
. . . . . Wetting agents CFH YL

CFI . . Interfaces
* Surfaces separating two physical phases.
J . . . Layers
K . . . . Boundary layer (chemical systems)
L . . . Films, surface films
M . . . . Thin films, monolayers
MT . . . . . Molecular films
MV . . . . . Monomolecular films
MW . . . . . Bimolecular films
MX . . . . . Polymolecular films
NC . . . . Multi-component films
NE . . . . Backed films, unbacked films
O . . . . Continuum films
OP . . . . . Condensed films
OR . . . . . Exposed films (chemical systems)
T . . . . Membranes, porous media
U . . . . . Permeable membranes
V . . . . . Semi-permeable membranes
Kinds of chemical systems by assumed properties
CFJ D . Perfect systems (mixed phase chemistry)
Kinds by degrees of freedom
F . Invariant systems (degrees of freedom)
H . Univariant systems
I . Bivariant systems
J . Trivariant systems
Kinds by number of components in system
Y . Single component chemical systems, one component chemical systems
CFK . Mixtures, mechanical mixtures
* For solutions, see CFM; for dispersions in general, see CFN T; for alloys, see chemical technology, see VL in Class U/V.
L . . Eutectic mixtures
P . Two component chemical systems
Q . Three component chemical systems
R . Four component chemical systems
S . Five or more component systems
Kinds of systems by stability of phase
T . Monotropic systems, monotropy
* No reversible change can take place.
V . . Stable systems (phases)
W . . Metastable systems (phases)
X . . Thermostable systems
Y . . Unstable systems (phases)

Solutions

Chemistry C
Physical chemistry CA
Mixed phase chemistry CF
Kinds of systems by stability of phase
. . Unstable systems CFK Y

Kinds by number of phases

CFL . Homogeneous chemical systems, single phase systems
K . . Mixtures

CFM . . . Solutions, molecular mixtures, dissolved state, critical mixtures
* For Electrolytic solutions, see CFM M.
* See also Crystalline state CFW
35 . . . . Practical chemistry
8I . . . . . Separation
8LK T . . . . . Electrostatic precipitation
8LQ . . . . . Dialysis
8LX . . . . . Centrifugation
. . . . *Properties/processes*
B . . . . . Physical properties of solutions
BCP . . . . . Stability
BHU . . . . . Conductivity
BKJ . . . . . Ionization
BKJ X . . . . . Hydrogen ion concentration, pH
BLM . . . . . Colour
BR . . . . . Colligative properties
* Dependent on the concentration of ions or molecules, not on the nature of the molecules or solute; eg osmotic pressure, vapour pressure, boiling point.
. . . . *Processes & reactions*
* For crystallization, see Crystallography BWO J.
CDE . . . . . Irreversible
CPJ . . . . . Association
CPL . . . . . Condensation
. . . . . Dissociation
CVP . . . . . Electrolytic dissociation, ionization
CVP N . . . . . Ionization heat (solutions)
CVP Q . . . . . Degree of dissociation
CVQ . . . . . Dissolution
* Formation of a homogeneous solution in a liquid.
EV . . . . . Solution (process)
. . . . . *Properties*
EVB DE . . . . . Kinetics of solution
EVD UGQ . . . . . Heat of solution
EVF . . . . . Solubility
EVL . . . . . Dilution
EVN . . . . . Concentration (process)
EVO . . . . . Normal concentration
EVP . . . . . Molar concentration, molarity
EVQ . . . . . Molal concentration, molality

Mixed phase chemistry CF
Homogeneous chemical systems CFL
Solutions CFM
Processes & reactions
. . Concentration CFM EVN
. . . Molal concentration CFM EVQ

CFM EW . . Osmosis
EWB BJ . . . Osmotic pressure
. . . . Instruments
EWB BJ5 . . . . . Osmometers
EWI T . . . Membranes
EWN . . . Electroosmosis
EX . . Electrophoresis
EY . . Solvation
* Interaction of the ions or molecules of the solute with the molecules of the solvent.
EYP . . Hydration (solution process)
Components of solutions
F . Solvents
FN . . Polar solvents
FO . . Non-polar solvents
FP . . Amphiprotic solvents
FQ . . Aprotic solvents
G . . Aqueous solvents, water (as solvent)
* For aqueous solutions, see CFM Q.
H . . Non-aqueous solvents
J . Solutes
L . Insoluble substances
LN . . Insolubility
LP . . Precipitation
LR . Precipitates
Kinds of solutions
LX . Standard solutions
M . Electrolytic solutions
. *Kinds by concentration*
ND . . Ideal solutions
NE . . Non-ideal solutions
NL . . Dilute solutions, weak solutions, non-saturated solutions
NM . . Normal solutions, molar solutions
NN . . Concentrated solutions
O . . Saturated solutions
P . . Supersaturated solutions
PR . . . Nucleation (solutions)
. *Kinds by solvent*
Q . . Aqueous solutions
Q8I . . . Separation
Q8I U . . . . Salting-out
R . . Non-aqueous solutions
S . . . Inorganic solutions
T . . . Organic solutions
U . *Kinds by solute*

Colloids

Chemistry C
Physical chemistry CA
Mixed phase chemistry CF
Homogeneous chemical systems CFL
. . . . Kinds by solute CFM U

CFN Heterogeneous chemical systems, multiple phase systems
* Each system may be qualified as follows (where the hyphen represents its classmark):
* Add to - letters A/E following C;
* Add to -F letters A/O following CF if applicable (ie, retroactively).

. *Kinds of heterogeneous systems by number of phases*
O . . Binary chemical systems, two-phase systems
* Usually assumed.
P . . Ternary chemical systems, three-phase systems
Q . . Quaternary chemical systems, four-phase systems
R . . Five-phase & more

. *Kinds by nature of phases*
T . . Dispersions, disperse systems
* Systems in which fine solid particles, liquid droplets or gas bubbles (the disperse phase) are dispersed throughout another medium (the continuous phase).
* For suspensions in fluids, see CFS P.

TAO . . . Molecular structure
TAO X . . . . *Special to a class*
* Arrange A/Z.
TAO XM . . . . . Micelles
TAO XV . . . . . Vesicles

. . . *Properties*
TP . . . . Phase ratio
TR . . . . Dispersity

. . . *Parts of disperse systems*
U . . . . Disperse phase
V . . . . Dispersion medium, continuous phase

. . . *Kinds of dispersions by particle size*
W . . . . With particles larger than colloids
X . . . . . Suspensions
Y . . . . . Others

Physical chemistry CA
Mixed phase chemistry CF
Heterogeneous chemical systems CFN
Dispersions CFN T
Kinds of dispersions by particle size
. . Others CFN Y

CFO Colloids, colloidal systems, colloidal dispersions
* Fine solid particles or liquid droplets (1-1000nm) dispersed through a continuous medium. Intermediate between coarse suspensions and molecular or ionic solutions. Most compounds can be brought to the colloid state
* Add to CFO letters A/E following C;
* Add to CFO letters F/N following CF if applicable.

. *Properties*
. . Structural properties
APS . . . Periodic structure (colloids), oriented structure
* See also Tactoids CFO X
BCP . . . Stability (colloids)
* For protection stability, see Protective colloids CFO PP.
BCP T . . . . Aggregate stability
BCP U . . . . Sedimentation stability
BSE . . . Reversibility (colloids)
CDB . . . . Reversible systems
CDE . . . . Irreversible systems
E . Electrical properties
EPK . . Electrophoresis
EPN . . Electric double layer
ES . Optical properties
ESF TR . . Tyndall effect

. *Processes in colloids*
* A few of these are special to a particular state; eg. pulverization of solids; decoacervation suc of emulsions; for such processes, see the state.

HC . . Formation of phase
HD . . Dispersion (process)
HF . . Deaggregation
HG . . Deflocculation
HI . . Purification
HJ . . Syneresis
* Shrinkage of colloid, with separation of liquid from a gel.
HK . . . Destruction of colloid
HL . . . Aggregation (colloids)
HM . . . Coalescence, coagulation (colloids)
HN . . . Concentration (colloids)
HO . . . Flocculation (colloids)
HP . . . Precipitation (colloids)
HQ . . . Sedimentation (colloids)
HT . . . Thixotropy
HU . . . Dilatancy (colloids)

Physical chemistry

Mixed phase chemistry CF
Heterogeneous chemical systems CFN
Dispersions CFN T
Colloids CFO
Processes in colloids
. . Dilatancy CFO HU

Components

CFO NU . Disperse phase (colloids)
* Normal retroactive synthesis is interrupted here to accommodate particles; it is resumed at CFO OL.

O . . Particles (disperse systems)
. . . *Properties of particles*
OHP . . . . Phase ratio
* Ratio of mass of disperse phase to the dispersion medium.
OI . . . . Size of particles (disperse systems)
. . . . . Measurement
OI7 6 . . . . . Sedimentation analysis
OJ . . . . . Dispersivity (disperse particles), size distribution (dispersion)
OJM . . . . . Monodispersivity
OJP . . . . . Polydispersivity
OK . . . . Shape of particles (disperse systems)
OL . . Dispersion media (colloids)
* Normal retroactive synthesis is resumed here after its interruption at CFO NU.
. . . *Kinds of media by substance*
ON . . . . Non-aqueous
* Add to CFO ON letters I/S following C.
. *Kinds of colloids*
. . *By attraction of solvent*
PC . . . Lyophylic colloids
PD . . . . Hydrophilic colloids
PF . . . Lyophobic colloids
PH . . . . Hydrophobic colloids
PJ . . . Intrinsic colloids
PK . . . Extrinsic colloids
PM . . . Associated colloids
PP . . . Protective colloids
. . Kinds special to a given state
* Notation is reserved here for use in different classes (eg, CFU THO Q Foams).
W . . Sols
* Usually assumed to be colloids of solids in liquids (see CFV UEO S). But see note at CFO.
W8L Q . . . Dialysis
X . . . Tactoids

Chemistry C
Physical chemistry CA
Mixed phase chemistry CF
. . . . . Tactoids CFO X

Systems by pure state of matter
* Add to CF letters R/W following B for the major states of matter. NB: the modifications of the physics classes noted at CFG X mean that retroactive synthesis when qualifying particular systems follows the notation of CF, not of BR/BW.
* Add to the classmark of each state letters A/P following CF; eg Liquids in gases - Colloids CFU TEO.

CFP Y . States of matter (chemistry)
CFR V . . Plasmas
CFS . . Fluids
. . . Conditions, parameters
9VW . . . . Continuity of state
. . . *Kinds of fluids by assumed properties*
JD . . . . Ideal fluids, perfect fluids
. . . *Kinds by complexity*
L . . . . Homogeneous
N . . . . Heterogeneous
NT . . . . . Mixed systems, dispersions
P . . . . . Suspensions (fluids)
* Mixtures in which small particles (liquid or solid) are suspended in a gas or liquid.
PO . . . . . Colloidal suspensions
. . . . . Anomalous fluids
SU . . . . . Non-Newtonian fluids
UV . . . . . Supercritical fluid state
CFT . . . Gases, gas phase
FT . . . . Equilibrium
. . . . Systems
. . . . . *Kinds of gases by assumed properties*
JD . . . . . Perfect gases, ideal gases
JDN . . . . . Imperfect gases, non-ideal gases
. . . . . *Kinds by number of components*
K . . . . . Mixtures
. . . . . *Kinds by number of phases*
NT . . . . . Dispersions
O . . . . . Colloidal gas dispersions
. . . . Special states
R . . . . . Rarefied gases
S . . . . . Compressed gases
T . . . . . Vapour state
V . . . . . Liquid gases, permanent gases
* Liquid phase of substances normally occurring as gas.

Condensed state

Chemistry C
Physical chemistry CA
States of matter CFP Y
Fluids CFS
. . . Liquid gases CFT V

CFT X Condensed state
* Limited to two phases (solids & liquids).
. *Properties*
XGG . . Vaporization

CFU . Liquids, liquid phase
. . Changes special to the phase
GG . . . Evaporation, vaporization (liquids)
GQ . . . . Boiling
GS . . . Superheating
H . . . Liquefaction of gases
. . *Kinds of liquid systems*
. . . *Kinds by assumed properties*
JD . . . . Perfect liquids, ideal liquids, inviscid liquids
JDN . . . . Imperfect liquids, non-ideal liquids
. . . *Kinds by number of components*
K . . . . Mixtures
. . . *Kinds by number of phases*
L . . . . Homogeneous
LK . . . . . Mixtures
M . . . . . Solutions
N . . . . Heterogeneous
NT . . . . . Dispersions
O . . . . . Colloids
. . . . . *Kinds by states involved*
TC . . . . . Liquids in gases & gases in liquids
TE . . . . . Liquids in gases
TEO . . . . . Colloids
TF . . . . . Aerosols (liquids), mists, fogs
TH . . . . . Gases in liquids
THK . . . . . Mixtures
THM . . . . . Solutions
THO . . . . . Colloids
THO Q . . . . . Foams
THO R . . . . . Foaming
THO S . . . . . Froths
* Unstable foam.
THO T . . . . . Frothing
U . . . . . Liquids in liquids
UK . . . . . Mixtures
UKU . . . . . Azeotropic mixtures
UO . . . . . Colloids
UOL . . . . . Emulsions
UOL BT . . . . . Stabilization
UOL BV . . . . . Emulsifying agents, emulsifiers
UOL Q . . . . . Direct emulsions
UOL R . . . . . Inverted emulsions
UOL S . . . . . Critical emulsions
UOL T . . . . . Oil in water

Physical chemistry CA
States of matter CFP Y
Condensed state CFT X
Liquids CFU
. Kinds of liquid systems
. . . . . Oil in water CFU UOL T

CFU UOL U . . . . . Water in oil
. *Kinds of liquids by special states*
VF . . Simple liquids
VH . . Complex liquids
VK . . . Associated liquids
VW . . Liquid crystals
* See also Crystallography BW
W . . Supercooled liquids
Y . . Water (as liquid)
* For works considering water narrowly in its special role in chemical systems. If in doubt, prefer under chemical substances at CKM O.
. . . Solvation
YME Y . . . . Hydration
. . . Colloids
YO . . . . Water (dispersion medium for colloids)

CFV Solids, solid state chemistry
. Changes special to the phase
GF . . Sublimation
GG . . . Vaporization (solid to gas)
GM . . Liquefaction (of solids)
GN . . . Melting, fusion (melting)
GO . . . . Vacuum fusion
GQ . . Solidification
GR . . . Freezing
GT . . . . Supercooling
GU . Pulverization
. *Kinds of systems of solids*
. . *Kinds by number of phases*
L . . . Homogeneous
. . . . Solutions
M . . . . . Solid solutions, homogeneous solid phase
MV . . . . . Substitional solid solutions, subtractional solid solutions
MW . . . . . Interstitial solid solutions
N . . . . Heterogeneous
NT . . . . Dispersions
NX . . . . . Suspensions
O . . . . . Colloids
. . . . . *Kinds of solutions by states involved*
TC . . . . . Solids in gases & gases in solids
TE . . . . . Solids in gases
. . . . . Mixtures
TEK . . . . . Dusts
TEM . . . . . Solutions
TEO . . . . . Colloids
TEO S . . . . . Smokes
TEO W . . . . . Aerosols (solids)
TH . . . . . Gases in solids

Solids

Physical chemistry CA
States of matter CFP Y
Condensed state CFT X
Solids CFV
Kinds by number of phases
. . . . Gases in solids CFV TH

CFV UB . . . . Solids in liquids & liquids in solids
UE . . . . Solids in liquids
UEK . . . . . Mixtures
UEM . . . . . Sons
UEN T . . . . . Dispersions
UEN X . . . . . Suspensions
UEN XR . . . . . Pastes
UEN XS . . . . . Slurries
UEO . . . . . Colloids
UEO R . . . . . Gels
. . . . . Formation
UEO RFR . . . . . Sol-gel transformation
UEO RP . . . . . Gelation, jelling
UEO RS . . . . . Swelling (gels)
UEO S . . . . . Sols, lysosols
* This is the usual meaning. But sometimes used to describe other colloidal forms.
UH . . . . Liquids in solids
V . . . . Solids in solids
VK . . . . . Mixtures
VKM . . . . . Clathrates
VO . . . . . Colloids
Systems special to solids
. *By physical form*
WD . . Small particles, powders, dusts (solids)
* See also Dusts (solids in gases) CFV TEK
WF . . Loose solids
WG . . Inclusions
WH . . Fibres
WL . . Sheets
. *By structure*
WN . . Non-homogeneous solids
X . . Amorphous solids, non-crystalline solids
Y . . . Glasses, vitreous state
CFW . . Crystalline state, crystal chemistry
* Alternative (not recommended) is to locate with crystallography in class BWY P.
* For polymorphism, see under Allotropy at CGH GCP Y.
CDB . . . Reversible reactions
* For enantiotropic forms, see CGH GCQ N.
. . . *Kinds of crystal by phase characteristics*
UL . . . . Liquid crystals
V . . . *Kinds by positional characteristics*
VD . . . . Disordered crystal systems
VV . . . *By relation of planes to axes*
. . . . Isotropic
. . . . Anisotropic
VW . . . . . Rhombohedral crystal forms

States of matter CFP Y
Condensed state CFT X
Solids CFV
Crystalline state CFW
By relation of planes to axes CFW VV
. . Rhombohedral crystal forms CFW VW

By bonding
CFW YC . Molecular crystals
YPQ . Clathrates, enclosure compounds, cage compounds
YQ . Metallic bond crystals (chemistry)

Chemical species

Physical chemistry CA
States of matter CFP Y
Condensed state CFT X
Solids CFV
Crystalline state CFW
. . Metallic bond crystals CFW YQ

CFX Mineralogy
* Alternative (not recommended) to collocating with petrology at DIP in Class D.

Chemistry C
Physical chemistry CA
. . . . . Mineralogy CFX

CG Chemical species, chemical substances
* Chemistry of particular chemical species and chemically defined groups of substances.
* For material on individual species with their associated compounds, see CGB/CGN (general), CH/CN (inorganic) and CO/CWH (organic).
* For substances defined primarily by an application, see Chemical technology VL.
* Do not qualify this general class (CG) by C2/CF, as substances are implicit in all those classes.

. *Kinds of substances by various characteristics*
* Classes CGB/CGD below represent substances defined by concepts taken from Classes CA/CF when these concepts are acting as specifiers (ie species-makers). They are given in the order of their appearance in CA/CF.
* Use CGB/CGD only for general works embracing elements and compounds as well as inorganic and organic compounds.

. . * For substances defined by phases or states of matter, see CF, eg, CFV Solids.

. *Kinds by physical properties*
* Add to CGB letters A/R following CAB; eg,

CGB HU . . Conductors
HWG . . Insulators
OFK . . Radioactive substances
P . . Atomic species
PRH W . . . Uncharged substances, neutral substances
PV . . . Nuclear species, nuclides
PW . . . . Isotopes
* See also Elements CGE BPW
Q . . Molecular species
* See, eg, molecular water, molecular benzene, molecular zeolites.
R . . Ionic species
* See, eg, ionic crystals, ionic gels.
* For polyatomic ions and complex ions, see Free radicals CGF Y.

. *Kinds by chemical combination & structure*
* Add to CGC letters C/N following CA; eg,

CGC CO . . Stoichiometric substances
CV . . Non-stoichiometric substances
. . *Kinds by bonding characteristics*
* Only very rarely will these apply other than to compounds (see CGH GCJ/N).
* Add to CGC letters J/N following CA, if applicable.

. . *Kinds by molecular structure*
* Most of the structures specified by CAO/CAP (eg, rings) imply compounds & works on these should go at CGH GCO.
* Add to CGC letters O/Q following CA; eg,

OQ . . . Chain structures
OW . . . Ring structures
PS . . Symmetrical substances
PU . . Asymmetrical substances

Periodic table

Chemistry C
Chemical species CG
Kinds by chemical combination & structure
. Asymmetrical substances CGC PU

Kinds by variations in molecular structure
* Most of the literature on these relates to compounds and the full schedule for them appears at CGH.
* Add to CGC letters Q/W following CGH GC; eg,

CGC Q . Polymorphic substances, polymorphs, allotropes
* For isomers, see CGH GCR; for polymers, see CGH GCV.

QHP . . Stable allotropes
QHR . . Dynamic allotropes
QJ . . Dimorphs
QN . . Enantiotropes

Substances by reaction properties
* For catalysts, see CCA (where the catalysts are enumerated as agents of the action).
* Add to CGD letters B/F following C; eg

CGD BDH . Activated substances
CPL . Condensation products

CGE Elements
* The groupings for various elements below (periods, blocks, groups, at CGE P/CGE S) are for general works only, dealing with the nature and theory of the groupings per se.
* Works on the individual elements are classed at CGF (general), CJT/CNY (with their inorganic compounds) or COM T/COP Y (with their organic copounds).
* Add to CGE A numbers & letters 2/9,A/F following C.

. *Kinds of elements by various characteristics*
* Add to CGE letters B/D following CG: eg,

BPW . . Isotopes
* Under a specific element, its isotopes are cited before (and file after) all other specifiers of that elements, following letter P; eg, Isotopic elements of hydrogen (inorganic chemistry) CKP.

BPX . . . Radioisotopes
BPY B . . . Isotopic elements
* Elements with more than one naturally occurring isotope.

CQ . . Polymorphous elements, allotropes (elements)
P . Periodic table

Chemistry C
Chemical species CG
Elements CGE
Periodic table CGE P

CGE P34 CV Periodic law (Mendeleev)
PAD T Orbitals
Q Periods of the Periodic table
. Specific periods
QIH . . Short periods
QIJ . . . Period 1
QIK . . . Period 2
QIL . . . Period 3
QIL L . . Long periods
QIM . . . Period 4
QIN . . . Period 5
QIO . . . Period 6
QIP . . . Period 7
R Blocks (periodic table)
RJW . Main group elements
* S-block and P-block together.
RJX . . S-block
RLD . . P-block
RNA . D-block, transition elements
RNA FYD . . Main transition series
RNA FYF . . Fourth transition series
* Elements 104/110.
RNY . F-block
RNY Q . . Lanthanides, lanthanons
RNY S . . Actinides, actinoids
S Groups of the Periodic table
* For an explanation of the variant numbering systems commonly used for these groups, see Introduction, Section . In naming the individual groups below, the IUPAC number is given first, followed by the earlier forms which are still used to designate the same groups, treated here as synonyms in the schedule.
. Specific groups
* For the location of particular elements making up the groups, see the first note at CGF below.
* Add to CGE S the letters from CJW/CNY for the individual groups given in the sequence CJQ/CNY.

SH . . Diagonal groups
SJY . . Group 1 elements
SKQ . . . Alkali metal elements
SKU . . Group 2 elements
SKV . . . Alkaline earth metal elements
SLE . . Group 13 elements
SLL . . Group 14 elements
SLR . . Group 15 elements
SLY . . Group 16 elements
SMT . . Group 17 elements
SMY . . Group 18 elements, inert gases, rare gases, noble gases
SNA . . Group 3 elements
SND . . Group 4 elements

Individual elements

Chemistry C
Chemical species CG
Elements CGE
Periodic table CGE P
. Groups of the Periodic table CGE S
. . . Group 4 elements CGE SND

CGE SNG . . . Group 5 elements
SNH . . . Group 6 elements
SNL . . . Group 7 elements
SNN . . . Group 8 elements
SNP . . . Group 9 elements
SNR . . . Group 10 elements
SNT . . . Group 11 elements
SNV . . . Group 12 elements
T . Metal elements
* For special groupings of metals by periodic relationships, see the containing block, group, etc; eg, Lanthanides CGE RNY Q.
* See also Inorganic metal compounds CJT; Organometallic compounds CTB
TL . Metalloid elements, semi-metal elements
TN . Non-metal elements

CGF Individual elements
* For completely comprehensive works dealing with the element per se and its inorganic and organic compounds together. Most of the works considering a given element and its compounds are limited to its inorganic compounds and these should go at CK/CNY.
* For instructions on how to subdivide a given element, see Appendix 1.
* Add to CGF letters K/NY following C; eg,
K . Hydrogen
KAB P . . Atomic hydrogen
KAB Q . . Molecular hydrogen, nascent hydrogen
KAB QS . . . Orthohydrogen
KAB QT . . . Parahydrogen
KP . . Isotopes of hydrogen
KPS . . . Protium
KPT . . . Deuterium, heavy hydrogen
KPU . . . Tritium
KR . Lithium
KS . Sodium
KT . Potassium
KY . Calcium
KYP R . . Radioisotopes of calcium
KYP S . . . Calcium-45
LB . Barium
LBP . . Isotopes of barium
LBP S . . . Barium-140
LC . Radium
LCP . . Isotopes of radium
* For radium F, see CMS RPS Polonium-210.
LCP S . . . Radium-226
LF . Boron
LFG JQ . . Allotropes

Chemistry C
Chemical species CG
Elements CGE
Individual elements CGF
Boron CGF LF
. Allotropes CGF LFG JQ

CGF LFP P . Isotopes of boron
LFP S . . Boron-10
LG Aluminium
LH Gallium
LHN . Trivalent
LI Indium
* Usually trivalent.
LM Carbon
LMG JQ . Allotropes of carbon
LMG JQR . . Graphite
LMG JQT . . Diamond
* See also DIP Mineralogy in Class D
LMG JQU . . Fullerenes
LMP . Isotopes of carbon
LMP PS . . Stable carbons
LMP Q . . . Carbon-12
LMP R . . . Carbon-13
LMP S . . Radioactive
LMP T . . . Carbon-14, radiocarbon
LMP U . . . Other
* For example, Carbon-10, -11 and -15.
LN Silicon
LO Germanium
LP Tin
LPG CQ . Allotropes of tin
LPG CQP . . White tin
LPG CQS . . Grey tin
LQ Lead
LS Nitrogen
LW Phosphorus
LWG CQ . Allotropes of phosphorus
LWG CQR . . Yellow phosphorus, white phosphorus
LWG CQT . . Violet phosphorus, red phosphorus
LWG CQV . . Black phosphorus
LX Arsenic
LXG CQ . Allotropes of arsenic
LXG CQR . . Grey arsenic, metallic arsenic
LXG CQT . . Yellow arsenic
LXV Antimony
LXV GCQ . Allotropes of antimony
LXV GCQ R . . Grey antimony
LXV GCQ T . . Black antimony
M Oxygen
MGB QU . Oxyanion
MGC Q . Allotropes of oxygen
MGC QR . . Dioxygen
MGC QT . . Ozone, trioxygen
MP . Isotopes of oxygen
MPQ . . Oxygen-18, heavy oxygen

Radicals

Chemistry C
Chemical species CG
Elements CGE
Individual elements CGF
Oxygen CGF M
. . Oxygen-18 CGF MPQ

CGF MQ Sulphur
MQF O . Amorphic sulphur
MQF VX . Colloidal sulphur
MQG CQ . Allotropes of sulphur
MQG CQR . . Monoclinic sulphur
MQG CQS . . Rhombic sulphur
MQG CQT . . Plastic sulphur
MQG CQW . . Other allotropic forms
MR Selenium
MRG CQ . Allotropes of selenium
MRG CQR . . Grey selenium
MSR Polonium
MSR P . Isotopes of polonium
MSR PS . . Polonium-210, radium F
MU Fluorine
MV Chlorine
MX Iodine
MXP . Isotopes of iodine
MXP S . . Iodine-131
MYV Radon
MYV P . Isotopes of radon
MYV PS . . Radon-220, thoron
MYV PT . . Radon-222
MYV PV . . Actinon, actinium emanation
NF Zirconium
NFP . Isotopes of zirconium
NFP S . . Zirconium-95
NQ Cobalt
NQP . Isotopes of cobalt
NQP S . . Cobalt-60
NQS Iridium
NQS PP . Isotopes of iridium
NQS PS . . Iridium-192
NS Nickel
NSP . Isotopes of nickel
NSP S . . Nickel-63
NU Copper
NUP . Isotopes of copper
NUP S . . Copper-64
NYU R Protactinium
NYU RP . Isotopes of protactinium
NYV Uranium
NYV P . Isotopes of uranium
NYV S . . Uranium 234
NYV T . . Uranium 235
NYV V . . Uranium 238

Chemistry C
Chemical species CG
Elements CGE
. . . . Uranium 238 CGF NYV V

CGF X Radicals
* For works on radicals in general, including free radicals and functional groups.
* There is no general consensus on the meaning of the three terms above. For their definition and interpretation in BC2, see Appendix 2.
* For free radicals, see CGF Y; for functional groups, see COG; for ions per se, see CAB R.
* Add to CGF X numbers & letters 2/9,A/F following C; eg,

XAH B . Binding sites (radicals), radical regions
. *Kinds of radicals*
* For works dealing with groups of elements (or, rarely) one element functioning as a radical in both inorganic and organic compounds. For works confined to radicals in inorganic compounds, see CJ/CNY; for works confined to organic compounds, see COI X/COP Y.
* If a work deals with a specific radical or functional group, its reaction mechanisms, bonding, etc, see CGG J/CGG NY.

. *Kinds of radicals by special properties & processes*
* Add to CGF XG letters A/C following COG G (functional groups); eg,

XGA KV . . Double bonded radicals
XGA PV . . Monofunctionlal radicals
XGC WJ . . Monosubstituted radicals
XGC WLC . . Orthosubstituted radicals
Y . Free radicals, free ions, polyatomic ions
* Add to CGF Y numbers & letters 2/9,A/F as in CGF X; eg,

YAH B . . Binding sites, regions
YCW . . Substitution, replacement
. . *Kinds of free radicals by properties/processes*
* Add to CGF YG letters A/C following COG G; eg,

YGC WM . . . Monosubstituted free radicals
YGC WN . . . Polysubstituted free radicals
YHA BR . . . Ionic species
YHA BS . . . . Cations (free radicals)
YHA BT . . . . Anions (free radicals)
. . *Kinds of free radicals by constituent elements*
* For works which consider a particular radical in its widest application (its reaction mechanisms, bonding, etc) rather than as a substituent of its defining containing compound. When in doubt, prefer under the latter.
* Add to CGG letters J/NY following C; eg,

CGG MKJ . . . Hydroxide radical
MQM IFS . . . Sulphate radical

Compounds

Chemistry C
Chemical species CG
Radicals CGF X
. . . Sulphate radical CGG MQM IFS

CGH Compounds
* General works only, embracing both inorganic and organic compounds.
* Compounds exclude radicals (CGI F) in BC2 practice. See Appendix 2 for explanation..
* Add to CGH numbers & letters 2/9,A/F following C; eg
. Terminology
25L O . . Nomenclature

. *Kinds of compounds by various characteristics*
. . *Kinds by physical properties*
* Add to CGH GB letters A/R following CAB; eg,
* Add to CGH GC letter C and letters J/N following CA; eg,
GBH U . . . Conductor compounds
GBH WG . . . Insulator compounds
GBO FK . . . Radioactive compounds
GBP V . . . Nuclear compounds, nuclides
* For isotopes, see Elements CGE BPW.
GBQ . . . Molecular compounds
* See, for example, molecular water, molecular benzene, molecular zoolites.
GBR . . . Ionic compounds
* See, for example, ionic crystals, ionic gels.
GCC O . . . Stoichiometric compounds
GCC V . . . Non-stoichiometric compounds
* Do not always have a constant chemical composition and cannot readily be represented by a whole number chemical formula.
. . *Kinds by bonding characteristics*
* For substances defined by their specific valency (oxidation state), see CGH IK/CGH T.
* Add to CGH GC letters J/N following CA; eg,
GCJ . . . Covalent compounds
GCK . . . . Coordinate bonded compounds, dative bonded compounds, semipolar bonded compounds, coordination compounds (general)
* For coordination (complex) compounds, see CIL.
GCK N . . . . Sigma bond compounds
* Resulting from a molecular orbital formed by overlap of atomic orbitals.
GCK P . . . . Pi bond compounds
* Resulting from a maximum overlap between atomic molecules.
GCK R . . . . Single bonded compounds, saturated compounds

Chemistry C
Chemical species CG
Compounds CGH
Kinds by bonding characteristics
. Covalent compounds CGH GCJ
. . Single bonded compounds CGH GCK R

CGH GCK S . . Multibonded compounds, unsaturated compounds
GCK U . . . Conjugate bonded compounds
GCK V . . . Double bonded compounds
GCK VM . . . . Mono-
GCK VP . . . . Poly-
GCK W . . . Triple bonded compounds
GCK X . . . Quadribonded compounds
GCK YB . . Polar covalent bonded compounds
GCK YD . . . Dipolar covalent bonded compounds
GCK YF . . Nonpolar compounds
GCK YG . . Cumulated bond compounds
GCK YH . . Isolated bond compounds
GCK YL . . Covalent bonds special to a given context
* For example, CJT GLU Metal bonds.
GCL . Ionic bond compounds, electrovalent compounds
* See also Coordination compounds CIL
GCL N . . Resonance bonded compounds, resonance hybrids
* For aromatic compounds, see CQY.
GCL T . Hydrogen bond compounds
GCL W . Bonds special to a given class
* The classmark -LW is reserved for qualifying particular classes; eg, CGI AGL W Binary acids
Kinds by molecular structure
* Add to CGH GC letters O/P following CA; eg,
GCO Q . Chain structures
GCO S . . Linear chains, straight chains, open chains
* For aliphatics (organic straight chains) see CP.
GCO U . . Branched chains
GCO V . . . Crosslinked chains
* For polymers, see CGH GCV.
GCO W . Ring compounds, closed chains
* For inorganic ring structures, see CHG GOW; for organic rings, see CQ; for chelate rings, see CGI MGO W.
GCO WJ . . Separately linked ring compounds
GCO WL . . Fused rings, condensed nuclei (rings)
GCP S . Symmetrical compounds
GCP U . Asymmetrical compounds

Isomerism

Chemistry C
Chemical species CG
Compounds CGH
Kinds by molecular structure
. Asymmetrical compounds CGH GCP U

Kinds by variations in structure

CGH GCP Y . Polymorphism, allotropy, allotriomorphism
* Assumption by a substance of two or more different structures which are most frequently stable in different temperature ranges.

GCQ . Polymorphic substances, polymorphous substances, polymorphs, allotropes
* Classes CGH GCQ below nearly always imply compounds; but the term Allotropes is often used when allotropes of elements is meant; in such cases, use CGE CQ.

GCQ HP . . Stable allotropes
GCQ HQ . . Metastable allotropes
GCQ HR . . Dynamic allotropes
GCQ J . . Dimorphs
GCQ JQH . . Dimorphism
GCQ K . . Trimorphs
GCQ KQH . . Trimorphism
GCQ L . . Monotropes
* No reversible change between crystal forms.

GCQ LQH . . . Monotropy
GCQ N . . Enantiotropes
* With reversible change between crystal forms.

GCQ NQH . . . Enantiotropy
GCQ NQP . . . . Enantiotropic modification
GCQ NQR . . . . Transition temperature
GCR . Isomers
* Having same chemical composition and molecular formula but differing in arrangement of their atoms.
* For isomerization as a reaction, see CDG.

GCR QH . . Isomerism
. . . *Properties*
GCR R . . . . Conformation
GCR S . . . . . Special forms, A/Z
GCR SC . . . . . Chair form
GCR T . . . . Rotational isomerissm
GCR V . . . . Valence isomerization
GCR W . . . Structural isomerism
* With different structural formulas.

GCS . . . . Tautomers
* Equilibrium mixture of two interconvertible forms, not usually isolable.

GCS QH . . . . . Tautomerism, dynamic isomerism
GCS S . . . . . Position isomerism
GCS ST . . . . . Prototropy
* Variation in position of H atom.

GCS SV . . . . . Anionotropy
* Variation in position of other atom, or group.

Chemistry C
Isomers CGH GCR
. . Structural isomerism CGH GCR W
. . . Tautomers CGH GCS
. . . . Position isomerism CGH GCS S
. . . . . Anionotropy CGH GCS SV

CGH GCS T . . . . Ring-chain tautomerism
* Interconversion from ring to chain.
* See also Chain structure CAO Q

GCS U . . . . Desmotropes
* Change in position of double bond; e.g.keto-form, enol-form.

GCS UQH . . . . . Desmotropism, mesomerism
GCS UT . . . . . Keto-form
GCS UV . . . . . Enol-form
GCS V . . . . . Other forms, A/Z
GCS VA . . . . . Amido-amidol (desmotropism)
GCS W . . . Metamers
GCS WQH . . . . Metamerism, functional group isomerism
. . . . . *Properties*
GCS WT . . . . . Mesomeric effect
* See also Conjugate bonds CAK U

GCT . . Stereoisomers
* Isomers with same structural formulas.
* For stereochemistry in general, see CAP.

GCT QH . . . Stereoisomerism, space isomerism, spatial isomerism, alloisomerism
GCT T . . . Optical isomers
. . . . *Properties*
GCT TU . . . . . Chirality, handedness
* Non-identity of an object with its mirror image.

GCT TV . . . Chirals, chiral centres
GCT U . . . Enantiomers
* Isomers are mirror images of each other.

GCT UQH . . . . Enantiomorphism
GCT UX . . . . . Racemic mixture
GCT V . . . . Diastereoisomers
* Isomers are not mirror images of each other.

GCT Y . . Geometrical isomers
* Isomers with atoms attached to each other in the same order & with the same bonds, but with different spatial or geometrical relationships.

GCU C . . . Cis-trans isomers
GCU D . . . . Cis-form isomers
GCU E . . . . Trans-form isomers
GCU I . . Ionization isomers
GCV Polymers
* Most of the literature deals with very large molecules (macromolecules) formed by the union of simple molecules (monomers); they are almost always organic compounds.
* This class takes general works only. It may be qualified if necessary by the detail given at CTE (organic polymers) as follows:
* Add to CGH GCV letters A/X following CTE;
* Add to CGH GCVY letters F/G following CT.

Compounds

Chemistry C
Chemical species CG
Compounds CGH
Kinds of compounds by various characteristics
. . Polymers CGH GCV

CGH GCV CQ . . . Polymerization
. . . *Kinds of polymers by number of monomers*
GCV YFJ . . . . Monomers, mer isomers, fac isomers
GCW . . Isomorphs
* When substances form crystals in which geometrically similar structural units are arranged in similar ways (eg alums).
GCX Structures special to a given class
* Notation reserved for use under particular classes when needed; eg, Carboranes - Nido carboranes CLF LMK GHG XN; Peptide residues CUF GHG XR.
. *Kinds of compounds by reaction properties/processes*
* Add to CGH GD letters B/E following C; eg,
GDC A . . Catalytic compounds
GDC PH . . Addition compounds
GDC PL . . Condensation compounds
GDC W . . Substitution compounds
Compounds by specific valency, oxidation state
* It is unlikely that much literature will appear at this general class, whose primary function is to specify individual compounds; eg CLF HL Bivalent boron (in inorganic chemistry).
* The concept of valency is almost coextensive with that of oxidation number (oxidation state) which is used here to arrange classes of binaries, acids and salts under any given element or combinations of elements.
* See also CGH GCI (Compounds by bonding characteristics)
. Less than one
IK . . Zerovalent compounds
J . Monovalent compounds
L . Bivalent compounds, divalent compounds
N . Trivalent compounds
P . Tetravalent compounds, quadrivalent compounds
R . Pentavalent compounds
S . Hexavalent compounds
SP . Heptavalent compounds
SQ . Octavalent compounds
SR . Higher valency compounds
T . Mixed valency compounds, polyvalent compounds
Compounds by number of constituent elements

Chemistry C
Chemical species CG
Compounds CGH
Compounds by number of constituent elements

CGH U . Binary compounds
* Terms like oxides, borides, etc. are often used to represent all the compounds of a given element (oxygen, boron, etc.) with others. But in some cases they are more strictly defined as representing binary compounds of the element concerned. When a work demonstrates the first use of such a term, use CGJ; when it demonstrates the second, use CHU.
UT . Ternary compounds
UU . Quaternary compounds
UV . Five or more
Y Acids & bases & salts together
YGI BR . Conjugate acids & bases
* Species related by loss or gain of a proton.
YN . . Neutral substances
CGI A . Acids
* Acids of particular inorganic compounds go with the compound in CK/CN; eg Oxyacids CMI A. The notation for hydrogen is omitted in the classmark; eg Phosphoric acid (H3PO4) is notated only by the phosphorus and oxygen components: CLW MIB R (where CLW is phosphorus, M is oxygen, IB is Specific acids and R is oxidation number. For specific acids, see CGI B
. . *By special bonding*
AGL W . . . Binary acids, hydracids
* The acidic H atom(s) are bonded to the O; eg H2SO4.
. . *By valency*
AHJ . . . Monovalent acids, univalent acids
. . *By structure*
AJB . . . Bronsted acids, protonic acids, proton acids
AJC . . . Lewis acids
. . *By polarizability*
AJE . . . Hard acids
AJF . . . Soft acids
AJG . . . Non-polar acids
AJH . . . Polar acids
AJI . . . . Dipolar acids
. . *By degree of dissociation*
AK . . . Strong acids
AL . . . Weak acids
. . *By degree of hydration*
AM . . . Ortho-acids
AN . . . Meta-acids
* For example, lower oxoacids.
AO . . . Polyacids, heteropoly acids
. . *By basicity*
* Number of replaceable hydrogens in the molecule.
AP . . . Neutral acids
AQ . . . Acidic acids

Acids & bases & salts together

Chemistry C
Compounds CGH
Acids & bases & salts together CGH Y
Acids CGI A
. By basicity
. . Acidic acids CGI AQ

CGI AR . . Basic acids
AS . . . Monobasic acids
ASP . . . Polybasic aids
AT . . . . Dibasic acids
AU . . . . Tribasic acids
B . Specific acids
* An individual acid goes under the compound defined by its constituent elements.
* To xIB (were x is the classmark of the compound) the letters following CGH for oxidation number are added; eg, CMQ MIB L for Thiosulphuric acid where CMQ is sulphur, M oxygen and L (following IB) is for oxidation number two (bivalent).
* Add to CGI B letters I/S following CGH; eg CMQ MIB L
C Bases
* Substances with a tendency to gain protons, typically hydroxides, metal oxides or compounds such as ammonia which give hydroxides in aqueous solution.
* See also metal oxides as bases CJT M; hydroxides CMK J; basic oxides CMJ IC
* Add to CGI C letters J/U following CGI A, if applicable, as follows:
* Add to CGI C letters JB/JI following CGI A;
* Add to CGI CK letters K/U following CGI A; eg
CJC . Lewis bases
* An electron donor; eg ammonia.
CKK . Strong bases
CKL . Weak bases
CQ . Alkalis
* Hydroxides which yield hydroxyl ions in aqueous solution. Alkali is often used as a synonym for base.
D . Specific bases
* Note under CGI B Specific acids also applies here.
E Salts
* Ionic compounds whose cations are any except H and whose anions are any except OH-. All are crystalline solids at room temperature.
* Salts of particular elements and compounds go with the element or compound; eg CKS IE Sodium salts. But in the case of hydrogen salts the constituent hydrogen should be ignored, as it is with acids (see note aat CGI A).
. *By physical state*
EHF U . . Fused salts, molten salts
. *By valency*
EHJ . . Monovalent salts
EI . Simple salts
. *By properties analogous to those of acids*
* Add to CGI E letters J/U following CGI A so far as applicable; eg
EP . . Normal salts, neutral salts
* Replacement of replaceable hydrogens by positive ions is complete.

Chemistry C
Chemical species CG
Compounds CGH
Acids & bases & salts together CGH Y
. . By properties analogous to those of acids
. . . Normal salts CGI EP

CGI EQ . . . Acid salts
* Replacement of replaceable hydrogens is only partial.
EQV . . . . Primary acid salts
EQW . . . . Secondary acid salts
EQX . . . . Tertiary acid salts
ER . . . Basic salts, alkaline salts
EV . . . Amphoteric salts
EW . . Double salts
* Crystalline salts with two different anions and/or cations.
EX . . Complex salts
EXS . . . Monobasic salts
F . . Specific salts
* This notation is reserved for use under particular elements and their compounds.
* An individual salt is arranged under the compound, defined by its constituent elements,
* To xIF (where x is the classmark of the compound) the letters following CGH for its oxidation number are added; eg, the classmark CMQ MIF L is for Thiosulphates (in which CMQ is Sulphur, M is Oxygen, IF is specific acid, L is Oxidation number 2).

J Complex compounds
* Combinations of a Lewis acid and a Lewis base. More specifically, compounds in which ligands (donors of lone pairs of electrons) are bound to one central metal atom by dative (covalent coordinate) bonds.
* Use this position for general works on complex compounds; for organic complex compounds, see COI J.
JAB CN . Equilibrium
JGI BR . Complex ions
* See also Double salts CGI EW; Radicals CGF X.
. *Constituents*
. . Acids
JIA JC . . . Lewis acids (complex compounds), acceptors (complex compounds), central metal ions (complex compounds)
JIC . . Bases
K . . Ligands, Lewis bases (ligands), donors (complex compounds), lone pair donors (ligands)
. . . *Kinds of ligands by charge*
KKN . . . . Neutral ligands
KKR . . . . Ionic ligands
KKS . . . . . Cationic ligands
KKT . . . . . Anionic ligands

Complex compounds

Chemical species CG
Compounds CGH
Complex compounds CGI J
Constituents
. . Kinds of ligands by charge
. . . . Anionic ligands CGI KKT

. . *By shape*
CGI KL . . . Linear ligands
KM . . . Tetrahedral ligands
KN . . . Square planar ligands
KO . . . Octahedral ligands
. . *By coordination number*
KQ . . . Monodentate ligands
KR . . . Bidentate ligands
KS . . . Tridentate ligands
KT . . . Quadridentate ligands, tetradentate ligands
KTO . . . . Octahedral
KU . . . Pentadentate ligands
KV . . . Hexadentate ligands
KVM . . . . Tetrahedral
KVN . . . . Square-planar
L Coordination compounds (complexes)
* Sometimes used as synonymous with complex compounds, in which case use CIJ. More specifically, a complex compound in which coordinate (dative) bonds between the central metal and ligands create a ring structure (especially in inorganic compounds).
* See also Transition metals CNA (in which coordination compounds are particularly prevalent).
* For coordination compounds in general, see CGH GCK.
M . Chelates
* Compounds in which coordination links complete a closed ring.
* For specific chelating agents, see CGI N.
. . Stability
MAB CP . . . Chelate effect
* Increased stability of complexes with chelate rings.
. . Formation
MCP B . . . Chelation
. . . . Isomerism
MCP BAR . . . . . Chelate ligand
MCP N . . . . Sequestering agents, complexones
N Specific complex compounds & ions
* The preferred arrangement is to distribute the compounds under the central metal atoms in CJT/CNX and to signify their distinctive nature by using -IN to introduce them in the same way as -IB and -IF introduce specific acids and salts.
* If only one kind of ligand qualifies the metal, add to its classmark the coordination number (Q/V taken from CIK Q/V); eg CNU INM VT Tetrachlorocopper (II) ([Cu(Cl)4]), in which T (from CIK T) is added to MV (from CMV Chlorine).

Chemistry C
Chemical species CG
Compounds CGH
Complex compounds CGI J
. Specific complex compounds & ions CGI N

* If there are two or more kinds of ligand, add the second one (in retroactive order) and ignore the coordination numbers; eg CNQ INM VLS M Tetraamminedichlorocobalt ([Co(NH3)4C12]), in which LSM (from CLS M Ammonia) is added in retroactive order to MV (from CMV).
* This class takes the complex ions (ligands per se) independent of the particular metals to which they may attach themselves.
* Add to CGI N letters JT/N following C; eg CGI NMV K Dichlorotetraaquachromium (III) ([CrCl2(H2O)4]]).

CGJ Compounds of one element with others in general
* Eg, oxides in the case of oxygen, hydrides in the case of hydrogen. See explanatory notes under Inorganic compounds CHJ.
* Use CGJ/CGN Y for general works only, embracing both organic and inorganic compounds of an element.
* Add to CG letters J/NY following C in CJ/CNY; eg,
Compounds by their periodic relations
Q . Compounds with elements of particular periods
T Compounds with metals in general
Compounds of particular elements
* Add to CG letters K/NY following C; eg,
CGK . Hydrogen compounds
CGL S . Nitrogen compounds
CGN Q . Cobalt compounds

CH Inorganic compounds, inorganic chemistry
* For works on compounds in general, including both their inorganic and organic aspects, see CGH.
* For bioinorganic compounds (dealing with the role of inorganic elements and compounds in biochemistry) see CTH J.
* Add to CH numbers & letters 2/9,A/FW following C.
Kinds of inorganic compounds
* Add to CH letters GB/NY following CGH; eg,
CHG BHU . Conductors
CCO . Stoichiometric compounds
. *Kinds by bonding characteristics*
CJ . . Covalent compounds
CL . . Electrovalent compounds
. *Kinds by molecular structure*
COQ . . Chain structures
COW . . Ring structures
CPS . . Symmetrical compounds
. *Kinds by variations in molecular structure*
CQ . . Allotropes
CV . . Polymers
. *Kinds by reaction characteristics*
DCP H . . Addition compounds
DCW . . Substitution compounds

Chemistry C
Chemical species CG
Compounds CGH
Kinds of inorganic compounds
. Kinds by reaction characteristics
. . Substitution compounds CHG DCW

. *Kinds by specific valency*
CHJ . . Monovalent compounds
CHU . . Binary compounds
. *Kinds by special relations to hydrogen*
CHY . . Acids & bases & salts together (inorganic compounds)
CIA . . Acids
CIC . . Bases
CIE . . Salts
CIJ . Complex compounds

Inorganic compounds of particular elements or groups of elements
CJQ . *Compounds with other elements in general*
* Add to x (where x is the classmark for any element) the letters JQ: eg, CMJ Q Oxides in general (where CM is Oxygen); CKJ Q Hydrides (where CK is Hydrogen).
CJR . *Compounds with elements of particular periods*
* For compounds with elements of particular blocks or periodic groups, see CJY/CNY (in which the order of the individual elements is determined by the order of these in the Periodic Table, at CGE P; eg, CLD Compounds with P-block elements.
JW . Compounds with main group elements
* S-block and P-block together; for compounds of these blocks individually, see CJW X and CLD respectively.
CJT . Metal compounds
* General works only for the classes of metals given below at CJT FK/CJU for the compounds of specific metals, see the metal(s) in CK/CNY.
* For alkali metals, see CKQ; for alkali earth metals, see CKV; for transition metals, see CNA; for rare earth metals, see CNB; for organometals, see COM T (or the alternative at CTB).
AY . . Reaction chemistry
DM . . . Oxygenation
* For corrosion, see CJT DP.
. . . Reaction special to this subject
DP . . . . Corrosion (metals)
FK . . Mixtures of metals
* For alloys, see Chemical technology VL in Class U/V.
GLW . . Metallic bond
GXC . . . Clusters
* Groups of metal atoms joined by metal-metal bonds.
GXI . . . Interstitial compounds (metals)
* Obtained by inserting small species (H, B, C, N, B) into a closely packed metal lattice.
HY . . Acids & bases & salts
* For general works on these taken together.

Chemistry C
Chemical species CG
Compounds CGH
Inorganic compounds of particular elements or groups of elements
Metal compounds CJT
. Acids & bases & salts CJT HY

CJT IEW . Double salts
* A group of double salts with the formula: A - salt.B - salt.24H2O, where A is a monovalent metal and B is a trivalent metal.
* For Alum, see CLG MQM IFN
IJ . Complex compounds
IK . . Ligands
IL . . Coordination compounds
JR . Compounds with metals of particular periods
* For compounds with elements of particular blocks or groups, see the block of group in the general sequence CJW CNY; eg, CNY Q Lanthanides.
JT Intermetallic compounds
CJU Metalloid compounds, semi-metal compounds
CJV Non-metal compounds

CJW Inorganic compounds by constituent elements
* The citation order of elements in a compound follows as far as possible the order in which they are cited in the molecular formula. For an explanation of the rules implicit in these, see Introduction (Section 9.66). Exceptions are made to these; eg, H is omitted as a constituent of acids (being implicit) and for hydrogen salts (to avoid separation from other closely related salts).
* Normally in BC2, citation order is the reverse of filing order. However, since the filing order of elements is based on the periodic table, the retroactive principle may have to be modified sometimes if the combination order of the constituents as found in a generally recognized molecular formula is to be observed. Because of this, the notation has been designed to allow both reverse and forward building of classmarks. An example of forward building is Potassium borate (K2B4O7), which needs to add CKT (potassium), CLF (boron) and CM (oxygen), taken in that order, to give CKT LFM IFJ (with the IFJ representing the monovalent salt).
* When more than one form of molecular formula is commonly used, constituents are cited retroactively; eg chlorine trioxide fluoride appears variously as ClO3F or ClFO3 or FClO3; it is therefore given the retroactive classmark CMV MUM HVS P (Chlorine - Fluorine - Oxygen) in which CMV is chlorine, MU (from CMU) is fluorine, M (from CM) is oxygen, and the final HVS P represents heptavalent chlorides.
* A number of special decisions when building classmarks (eg, assigning oxidation numbers or valencies) are explained in Appendix 1 (How to subdivide a class). This also includes an account of an alternative procedure for some situations which allows a more specific classmark for specific compounds.
Q . Main group chemistry
* S-block and p-block elements.

Inorganic compounds by constituent elements

Chemistry C
Chemical species CG
Compounds CGH
Inorganic compounds of particular elements or groups of elements
Inorganic compounds by constituent elements CJW
Main group chemistry CJW Q

CJW X . Compounds of S-block elements
* See note at CJQ.
* For helium compounds, see under P-block elements, at CMY Q.

Y . . Compounds of Group 1 elements

Specific elements

CK . Hydrogen

. . *Kinds of compounds by bonding characteristics*
* For hydrogen bond compounds in general, see CGH GCL T.

CKI A . . . Acids
* For acids in general, see CIA. For particular acids, see element(s) combining with hydrogen, cited in the order in which they occur in the molecular formula, but excluding the hydrogen; eg sulphuric acid CMQ MIB S.

. . . Salts

E . . . . Saline hydrides, salt hydrides

. . *Compounds of H with other elements*

CKJ Q . . . Hydrides (in general)

QAJ . . . . Covalent hydrides

QIJ . . . . Complex hydrides

. . . Hydrogen compounds with oxygen
* These are usually subordinated to oxygen, as in molecular formulae; eg, Calcium hydroxide CKY MKJ HL - in which CKY is calcium, M is oxygen, K is hydrogen and HL is dioxides.

CKM J . . . . Oxides
* For hydroxides, see CMK J; for water, use CKM O.

JHL . . . . . Hydrogen peroxide

O . . . . . Water

OJ . . . . . Compounds

P . . . . . Hydrates

PN . . . . . Anhydrides, anhydrous compounds, hydrated compounds

Q . . . Hydrogen compounds with sulphur

QJ . . . . Hydrogen sulphide, hydrogen disulphide, sulphuretted hydrogen

R . . . Hydrogen compounds with selenium

RJH J . . . . Hydrogen selenide

S . . . Hydrogen compounds with tellurium

SJ . . . . Hydrogen telluride

CKP P . . Isotopic compounds of hydrogen

TM . . Deuterium oxide, heavy water

Chemical species CG
Compounds CGH
Inorganic compounds of particular elements or groups of elements
Inorganic compounds by constituent elements CJW
Hydrogen CK
. Deuterium oxide CKP TM

CKQ Alkali metal compounds

IJ . Complex compounds

LMM . Compounds of alkali metals with carbon & oxygen

LMM IFJ . . Carbonates

LVM . Compounds with nitrogen & oxygen

LVM IFL . . Nitrates

M . Compounds with oxygen

MJ . . Oxides

MK . Compounds with oxygen & hydrogen

MKJ . . Hydroxides of alkali metals

MTJ . Halides

CKR . Lithium

CKS . Sodium

LFM . . Compounds with boron & oxygen

LFM IE . . Salts

LFM IFJ . . . Sodium borates

LFM IFN . . . . Borax, disodium tetraborate-10-water, hydrated sodium borate, sodium pyroborate, sodium tetraborate
* See also Mineralogy DIP in Class D

. . Compounds with oxygen & hydrogen

. . . Bases

MKJ . . . . Sodium hydroxide, sodium hydrate, caustic soda

MV . . Sodium compounds with chlorine

MVI E . . . Salts

MVI FJ . . . . Sodium chloride, common salt, table salt

CKT . Potassium

LFM . . Potassium compounds with boron & oxygen

. . . Monovalent salts

LFM IFJ . . . . Potassium borate

. . . Trivalent salts

LFM IFN . . . . Potassium perborate

LGM Q . . Potassium compounds with aluminium & sulphur

. . . Double salts

LGM QIE W . . . . Potassium aluminium sulphate, potash alum.
* Often referred to simply as alum.

LMM . . Potassium compounds with carbon & oxygen

. . . Monovalent salts

LMM IFJ . . . . Potassium carbonate, potash

LMM IFK . . . . Potassium bicarbonate, potassium hydrogen carbonate

Compounds

Compounds CGH
Inorganic compounds of particular elements or groups of elements
Inorganic compounds by constituent elements CJW
Potassium CKT
. Potassium compounds with carbon & oxygen CKT LMM
. . . Potassium bicarbonate CKT LMM IFK

CKT LNM . Potassium compounds with silicon & oxygen
. . Monovalent salts
LNM IFJ . . . Potassium silicate
LNM U . Potassium compounds with silicon & fluorine
LNM UIF J . . Potassium fluorosilicate, potassium silicofluoride
LS . Potassium compounds with nitrogen
LVL M . . Potassium compounds with nitrogen & carbon
LVL MIF J . . . Potassium cyanide
LVM . . Potassium compounds with nitrogen & oxygen
. . . Monovalent salts
LVM IFJ . . . . Potassium nitrite
LVM IFL . . . . Potassium nitrate
LWM . Potassium compounds with phosphorus & oxygen
LWM IE . . Salts
LWM IFJ . . . Potassium phosphates
LWM IFJ Q . . . . Potassium acid phosphate, potassium dihydrogen phosphate, KDP, potassium diphosphate, potassium orthophosphate
LWM IFJ R . . . . Potassium hydrogen phosphate, potassium monophosphate
LWM IFJ S . . . . Tripotassium orthophosphate, neutral potassium phosphate
M . Potassium compounds with oxygen
MJ . . Potassium oxides
MJH J . . . Potassium monoxide
MJH L . . . Potassium peroxide
MJH P . . . Potassium oxide, potassium dioxide, potassium superoxide
. Potassium compounds with oxygen & hydrogen
MKJ . . Potassium hydroxide
MQ . Potassium compounds with sulphur
MQJ . . Potassium sulphide
MQM . . Potassium compounds with sulphur & oxygen
MQM IE . . Salts
MQM IFP . . . Potassium sulphite
MQM IFS . . . Potassium sulphate
MV . Potassium compounds with chlorine
MVI E . . Salts
MVI FJ . . . Potassium chloride
MVM . Potassium compounds with chlorine & oxygen
MVM IFJ . . Potassium chlorate
R Rubidium
S Caesium

Chemistry C
Chemical species CG
Compounds CGH
Inorganic compounds of particular elements or groups of elements
Inorganic compounds by constituent elements CJW
. . . Caesium CKT S

CKT T . . . Franconium

CKU Group 2 compounds

CKV . Alkaline earth metals compounds
* Definition of scope varies.
IJ . . Complex compounds
. . Compounds with oxygen
MIE . . . Oxo-salts
MJ . . . Alkaline earth oxides
CKW . . Beryllium, glucinium
K . . . Compounds with hydrogen
KJ . . . . Beryllium hydride
LS . . . Compounds with nitrogen
LSJ . . . . Beryllium nitride
LVM . . . Compounds with nitrogen & oxygen
LVM IFL . . . . Beryllium nitrate
M . . . Compounds with oxygen
MJ . . . . Beryllium oxide
MK . . . Compounds with oxygen & hydrogen
MKJ . . . . Beryllium hydroxides
MU . . . Compounds with fluorine
MUJ . . . . Beryllium fluoride
CKX . . Magnesium
IJ . . . Complex compounds
LMM . . . Compounds with carbon & oxygen
LMM IFP . . . . Magnesium carbonate
LMM IFP HGB . . . . . Anhydrous
LMM IFP HGC . . . . . Hydrated
LMM IFQ . . . . Magnesium hydrogencarbonate, magnesium bicarbonate
LNM . . . Compounds with silicon & oxygen
LNM IFL . . . . Magnesium silicate
LNM U . . . Compounds with silicon & fluorine
LNM UIF L . . . . Magnesium fluorosilicate, magnesium silicofluoride
LS . . . Compounds with nitrogen
LSJ . . . . Magnesium nitride
LVM . . . Compounds with nitrogen & oxygen
LVM IFL . . . . Magnesium nitrate
LWM . . . Compounds with phosphorus & oxygen
LWM IFL . . . . Magnesium phosphates
LWM IFL IES . . . . . Monobasic magnesium phosphate
LWM IFL IET . . . . . Dibasic magnesium phosphate
LWM IFL IEU . . . . . Tribasic magnesium phosphate
M . . . Compounds with oxygen
MJ . . . . Oxides
MJH L . . . . . Magnesium oxide, magnesia, periclase

Compounds

Chemical species CG
Compounds CGH
Inorganic compounds of particular elements or groups of elements
Magnesium CKX
. Compounds with oxygen CKX M
. . . Magnesium oxide CKX MJH L

CKX MJH P . . . Magnesium peroxide
. Compounds with oxygen & hydrogen
MKJ HJ . . Magnesium hydroxide, magnesium hydrate, brucite, milk of magnesia
MT . Compounds with halogens
MTJ . . Magnesium halides
CKY Calcium
LM . Compounds with carbon
LMJ SQ . . Calcium carbide, calcium acetylide, calcium dicarbide, carbide
LML S . Compounds with carbon & nitrogen
LML SIF L . . Calcium cyanide, black cyanide
LMM . Compounds with carbon & oxygen
. . Monovalent
LMM IFJ . . . Calcium oxalate
. . Divalent
LMM IFL . . . Calcium carbonate, calcite
LMM IFM . . . Calcium hydrogen carbonate, calcium bicarbonate
LNM . Compounds with silicon & oxygen
LNM IFL . . Calcium silicates
LNM IFL P . . . Calcium metasilicate
LNM IFL Q . . . Dicalcium silicate
LNM IFL R . . . Tricalcium silicate
LS . Compounds with nitrogen
LVM . Compounds with nitrogen & oxygen
LVM IFL . . Calcium nitrate, nitrocalcite
LWM . Compounds with phosphorus & oxygen
LWM IFL . . Calcium phosphate, calcium orthophosphate
LWM IFL Q . . . Monobasic calcium phosphate, monocalcium phosphate, calcium dihydrogen phosphate, acid calcium phosphate, superphosphate
LWM IFL R . . . Dibasic calcium phosphate, dicalcium orthophosphate, dicalcium phosphate, calcium hydrogen phosphate
LWM IFL S . . . Tribasic calcium phosphate, tricalcium phosphate
M . Compounds with oxygen
MJH L . . Calcium oxide, quicklime
MJH P . . Calcium peroxide
. Compounds with oxygen & hydrogen
MKJ HL . . Calcium hydroxide, slaked lime
MQ . Compounds with sulphur
MQJ . . Calcium sulphide
MQM . Compounds with sulphur & oxygen
MQM IFL . . Calcium sulphite

Chemical species CG
Compounds CGH
Inorganic compounds of particular elements or groups of elements
Calcium CKY
. Compounds with sulphur & oxygen CKY MQM
. . Calcium sulphite CKY MQM IFL

CKY MQM IFM . . Calcium sulphate, anhydrite
. . . Hydrate
MQM IFM KMP . . . . Gypsum, selenite, satin-spar, alabaster
MU . Compounds with fluorine
MUJ HL . . Calcium fluoride, fluorite, fluorspar
MV . Compounds with chlorine
MVJ HL . . Calcium chloride, tachydrite
CLA Strontium
LMM . Compounds with carbon & oxygen
LMM IFL . . Strontium carbonate
. Compounds with oxygen & hydrogen
MKJ HL . . Strontium hydroxide
MQ . Compounds with sulphur
MQJ HL . . Strontium sulphide, strontium monosulphide
MQM . Compounds with sulphur & oxygen
MQM IFL . . Strontium sulphate, celestine
MT . Compounds with halogens
MTJ . . Strontium halides
NEM . Compounds with titanium & oxygen
NEM IFL . . Strontium titanate
NO . Compounds with iron
NOM IFN . . Strontium ferrate
CLB Barium
LMM . Compounds with carbon & oxygen
LMM IFL . . Barium carbonate, witherite
LS . Compounds with nitrogen
LSI FL . . Barium azide
M . Compounds with oxygen
MJH L . . Barium oxide, barium monoxide, barium protoxide
MJH P . . Barium peroxide, barium dioxide, barium binoxide, barium superoxide
. Compounds with oxygen & hydrogen
MKJ HL . . Barium hydroxide, baryta
MQ . Compounds with sulphur
MQJ HL . . Barium sulphide, black ash
MQM . Compounds with sulphur & oxygen
MQM IFL . . Barium sulphite
MQM IFM . . Barium sulphate, heavy spar, barytes
MT . Compounds with halogens
MTJ . . Barium halides
. . Compounds with chlorine
MVJ HL . . . Barium chloride
NEM . Compounds with titanium & oxygen
NEM IFL . . Barium titanate
NIM . Compounds with chromium & oxygen
NIM IFL . . Barium chromate

Boron

Chemistry C
Compounds CGH
Inorganic compounds of particular elements or groups of elements
. . . Barium CLB
. . . . Compounds with chromium & oxygen CLB NIM
. . . . . Barium chromate CLB NIM IFL

CLB NKM . . . . Compounds with tungsten & oxygen
NKM IFL . . . . . Barium tungstate, barium white, barium wolframate, tungstate white, wolfram white
CLC . . . Radium
MT . . . . Compounds with halogens
MTJ . . . . . Radium halides
MV . . . . . Compounds with chlorine
MVJ HL . . . . . Radium chloride
MW . . . . . Compounds with bromine
MWJ HL . . . . . Radium bromide

CLD P-block element compounds

CLE . Group 13 element compounds
CLF . . Boron
. . . Compounds with other elements in general
JQ . . . . Borides
JT . . . Compounds with metals
JTJ Q . . . . Metal borides
. . . . . Clusters
JTJ QLR . . . . . Metalloboranes
K . . . Boron compounds with hydrogen
KJ . . . . Boron hydrides, boranes
. . . . . Anions
KJG BT . . . . . Borohydride anions, borane anions
KJG BTP . . . . . Tetrahydroborate ion
. . . . . Boranes with special structures
* See also Multi-centred bonding CAK M
KJG HGX C . . . . . Closo-boranes
KJG HGX CGB T . . . . . Closo borane anions, polyhedral borane anions
* See also Carboranes CLF LMK
KJG HGX N . . . . . Nido-boranes
KJG HGX R . . . . . Arachno-boranes
. . . . . *By valency*
KJH P . . . . . Tetravalent boranes, tetraboranes
KJH PP . . . . . Diboranes, boroethane, diboron hexahydride
KJH PQ . . . . . Triboranes

Chemistry C
Compounds CGH
Boron CLF
. Boron compounds with hydrogen CLF K
. . . . Tetravalent boranes CLF KJH P
. . . . . Triboranes CLF KJH PQ

CLF KJH R . . . . Pentaboranes
KJH S . . . . Hexaboranes
KJH SR . . . . Higher boranes
. Boron compounds with carbon & hydrogen
LMK . . Carboranes
. . . With special structures
LMK GHG XC . . . . Polyhedral carboranes, closo-carboranes
LMK GHG XN . . . . Nido carboranes, open carboranes
LMK JT . . . Carboranes with metals
LMK JTI JGB T . . . . Metal complexes of carborane anions
LS . Boron compounds with nitrogen
LSJ . . Boron nitride
. . . Allotropes
LSJ GQ . . . . Borazon
LSK . With nitrogen & hydrogen
LSK JHJ . . Borazole, borazine
M . Boron compounds with oxygen
. . Acids
MIA . . . Oxyacids of boron
MIB N . . . . Metaboric acid
MIB O . . . . Orthoboric acid, boric acid, trioxoboric (III) acid
MIB P . . . . Tetraboric acid
* For borax, see CKS LFM IFN.
MIE . . Salts
MIF N . . . Metaborates
MIF O . . . Borates
MIF P . . . Tetraborates, pyroborates
* For borax, see CKS LFM IFN.
MJ . . Boron oxides
MJH L . . . Boron monoxide
MJH N . . . Boric oxide, boron trioxide
MT . Boron compounds with halogens
MTJ . . Boron halides
MTJ HN . . . Trihalides of boron
MU . Boron compounds with fluorine
MUI A . . Acids
MUI BN . . . Borofluoric acid, fluoroboric acid
MUI E . . Salts
MUI FN . . . Boron fluorates, fluoroborates
MUJ . . Boron fluorides
MUJ H . . . Boron trifluoride
CLG Aluminium, aluminum
LNM . Compounds with silicon & oxygen
LNM IFN . . Aluminium silicate
M . Compounds with oxygen
. . Salts
MIF N . . . Aluminates
MJH N . . Aluminium oxide, alumina

Chemistry C
Chemical species CG
Compounds CGH
Aluminium CLG
. Compounds with oxygen CLG M
. . Aluminium oxide CLG MJH N

. Compounds with oxygen & hydrogen
CLG MKJ HN . . Aluminium hydroxide, alumina trihydrate, hydrated aluminium oxide
MQ . Compounds with sulphur
MQJ HN . . Aluminium sulphide
MQM . Compounds with sulphur & oxygen
. . Salts
MQM IFN . . . Aluminium sulphate, alums (general)
* For alums, see also specific metals concerned; eg Potassium aluminium sulphate CKT LGM QIE W.
. Compounds with halogens
MTJ . . Aluminium halides
. Compounds with chlorine
MVJ HN . . Aluminium chloride
CLH Gallium
JT . Compounds with metals
JTJ T . . Gallium intermetallic compounds
* For gallium compounds with individual metals, see the metal; eg, gallium arsenide CLH LX.
K . Compounds with hydrogen
KJH N . . Gallium hydride
LS . Compounds with nitrogen
LSJ HN . . Gallium nitride
M . Compounds with oxygen
MJH N . . Gallium oxide
. Compounds with oxygen & hydrogen
MKJ HN . . Gallium hydroxide
MT . Compounds with halogens
MU . . Compounds with fluorine
MUJ HJ . . . Gallium monofluoride
MV . . Compounds with chlorine
MVJ HL . . . Gallium dichloride
MW . . Compounds with bromine
MWJ HN . . . Gallium bromide (GaBr3)
CLI Indium
* Usually valency 3, but also 1 and 2.
LW . Compounds with phosphorus
LWJ . . Indium phosphide
LX . Compounds with arsenic
LXJ . . Indium arsenide
LXV . Compounds with antimony
LXV J . . Indium antimonide
M . Compounds with oxygen
MJ . . Indium oxide
MQM . Compounds with sulphur & oxygen
MQM IFN . . Indium sulphate
MT . Compounds with halogens
MTJ . . Indium halides
MVJ HN . . . Indium chloride

Chemistry C
Chemical species CG
Compounds CGH
Group 13 element compounds CLE
. Indium CLI
. . . . Indium chloride CLI MVJ HN

CLJ . Thallium
. . Monovalent compounds
HJ . . . Thallous compounds
. . Trivalent compounds
HN . . . Thallic compounds
M . . Compounds with oxygen
MJH J . . . Thallium monoxide, thallous oxide
MJH N . . . Thallium peroxide, thallic oxide
MK . . Compounds with oxygen & hydrogen
MKJ J . . . Thallium hydroxide
MQ . . Compounds with sulphur
MQJ HJ . . . Thallium sulphide, thallous sulphide
MQM . . Compounds with sulphur & oxygen
MQM IFJ . . . Thallium (I) sulphate, thallous sulphate
MQM IFN . . . Thallium (III) sulphate
MT . . Compounds with halogens
MTJ . . . Thallium halides
MV . . . Compounds with chlorine
MVJ HJ . . . . Thallium monochloride
MVJ HN . . . . Thallium trichloride

CLL Group 14 compounds
CLM . Carbon (inorganic compounds)
. . *Kinds of carbon by valency*
HJ . . . Monovalent carbon
HL . . . Divalent carbon
HP . . . Tetravalent carbon, quadrivalent carbon
* Carbon is tetravalent in nearly all its compounds and this is usually assumed. For the great majority of these compounds, see CO Organic chemistry. If in doubt regarding a specific compound, prefer organic chemistry.
. . Compounds with other elements in general
J . . . Carbides
* Compounds of carbon with elements of lower electronegativity (usually metals).
* A few carbides are covalent; see the specific elements concerned, eg silicon carbide (SiC) CLN LMJ.
JQI E . . . . Saline carbides
JT . . Carbon compounds with metals
JTJ . . . Metal carbides
JTJ GJ . . . . Covalent
JTJ GL . . . . Electrovalent
. . . . Special structures
JTJ HGX . . . . . Interstitial carbides (general)
* For specific compounds, see the metal; eg iron carbide CNO LMJ.

Carbon

Chemistry C
Compounds CGH
Group 14 compounds CLL
Carbon CLM
Carbon compounds with metals CLM JT
. . . Interstitial carbides CLM JTJ HGX

CLM LS Compounds with nitrogen
. Monovalent
LSH J . . Cyano
* Acts primarily as a radical; most of the literature relates to the cyano group in organic chemistry, in compounds with a double bond, especially nitriles; (see CPN VNM).
. Divalent
LSH L . . Cyanogen, dicyanogen
. . . Polymers
LSH LGV . . . . Paracyanogen
LSI A . Acids
LSI BP . . Hydrocyanic acid, formonitrile, hydrogen cyanide, prussic acid
LSI E . Salts
LSI FP . . Cyanides
* For nitriles, see CON VNM IF (also CPN VNM); for ferro- & ferricyanides, see CNO LML SIJ; for isocyanates, see CLM LVM IFP GR; for thiocyanates, see CMQ LML SIF P.
LSI FPG J . . . Covalent cyanides
LSI FPG L . . . Ionic cyanides
LSI FPI J . . . Complex cyanides
LVM . Compounds with nitrogen & oxygen
LVM IA . . Acids
LVM IBP . . . Cyanic acid
LVM IBP H . . . . Isocyanic acid
LVM IBP L . . . . Fulminic acid, paracyanic acid, carbyloxime
LVM IE . . Salts
LVM IFP . . . Cyanates (salts), fulminate
LVM IFP GR . . . . Isocyanates
LVM Q . Compounds with nitrogen & sulphur
LVM QIA . . Acids
LVM QIB P . . . Thiocyanic acid, sulfocyanic acid, rhodanic acid
LVM QIE . . Salts
LVM QIF P . . . Thiocyanates
M Compounds with oxygen
MIA . Acids
MIB P . . Carbonic acid
MIE . Salts
MIF P . . Carbonates
MIF Q . . Hydrogen carbonates, bicarbonates
MJ . Oxides of carbon
MJH L . . Carbon monoxide
MJH M . . . Carbonyl
MJH P . . Carbon dioxide
MJH PQ . . Carbon suboxide

Chemistry C
Compounds CGH
Group 14 compounds CLL
Carbon CLM
. Compounds with oxygen CLM M
. . . Carbon suboxide CLM MJH PQ

CLM MJT . Compounds with oxygen & metals
MMV . Compounds with oxygen & chlorine
MMV JHM . . Carbonyl chloride, phosgene
MQ . Compounds with sulphur
MQI A . . Acids
MQI BP . . . Thiocarbonic acid
MQI E . . Salts
MQI FP . . . Thiocarbonates
MQJ . . Carbon sulphides
MQJ HP . . . Carbon disulphide
MT . Compounds with halogens
MTJ . . Carbon halides
MV . . Compounds with chlorine
MVJ HP . . . Carbon tetrachloride
CLN Silicon
* Valency usually 4, but sometimes 6, especially in O and F compounds.
HP . Quadrivalent compounds, tetravalent compounds
HS . Hexavalent compounds
. Compounds with other elements in general
JQ . . Silicides
K . Compounds with hydrogen
KJ . . Silanes, silicon hydrides
KJH N . . . Disilane
KJH O . . . Trisilane
KJH P . . . Silane, monosilane
LM . Compounds with carbon
LMJ . . Silicon carbide, carborundum
LS . Compounds with nitrogen
LSJ . . Silicon nitride
M . Compounds with oxygen
MIA . . Acids
MIB P . . . Silicic acid
MIB Q . . . Orthosilicic acid, silica gel
MJH L . . Silicon monoxide
MJH P . . Silicon dioxide, silica
MJT . Compounds with oxygen & metal
MJT J . . Silicates
* Compounds of Si, O & one or more metals. A very extensive group of compounds, many of which are minerals (see Mineralogy DIP in Class D) and reflect very complex structures containing the tetrahedral SiO4 group.
* See also specific metal silicates; eg aluminosilicates CLG LNM.
. . . *Kinds by molecular structure*
MJT JGO Q . . . . Chain silicates, infinite chain silicates

Group 14 compounds

Chemistry C
Group 14 compounds CLL
Silicon CLN
. Compounds with oxygen & metal CLN MJT
. . . Kinds by molecular structure
. . . . Chain silicates CLN MJT JGO Q

CLN MJT JGO W . . . . Cyclic ions, ring silicates, metasilicates
* See also organic cyclic silicates.
MJT JGO WO . . . . . Orthosilicates
MJT JGO XE . . . . Sheet silicates, infinite sheet silicates, disilicates
MJT JGO XG . . . . Three-dimensional silicates, silica-type silicates
MJT JGO XP . . . Pyrosilicates
MU . Compounds with fluorine
MUI A . . Acids
MUI BP . . . Silicofluoric acid
MUJ HP . . Silicon tetrafluoride
MV . Compounds with chlorine
MVJ . . Silicon chlorides
MVJ HP . . . Silicon tetrachloride, tetrachlorosilane
CLO Germanium, eka-silicon
HL . Divalent germanium, germanous compounds
HP . Tetravalent germanium, germanic compounds
. Compounds with other elements in general
JQ . . Germanides
JX . Compounds with S-block elements
K . Compounds with hydrogen
KJ . . Germanium hydrides, germanes
M . Compounds with oxygen
MIE . . Salts
MIF P . . . Germanates
MJH L . . Germanium oxide, germanous oxide
MJH P . . Germanium dioxide, germanic oxide
MT . Compounds with halogens
MTJ HL . . Germanium dihalides
MTJ HP . . Germanium tetrahalides
CLP Tin
. Divalent
HL . . Stannous compounds, tin (II) compounds
. Tetravalent
HP . . Stannic compounds, tin (IV) compounds
K . Compounds with hydrogen
KJH P . . Stannane (SnH4), tin (IV) hydride
M . Compounds with oxygen
MIA . . Acids
MIB L . . . Stannous acid
MIB P . . . Stannic acids
MIB QA . . . . Alpha-stannic acid
MIB QB . . . . Beta-stannic acid, metastannic acid
MIE . . Salts
* See also Tin oxides CLP MHV
MIF L . . . Stannites, stannate (II) compounds, stannous oxide

Chemistry C
Group 14 compounds CLL
Tin CLP
. Compounds with oxygen CLP M
. . Salts CLP MIE
. . . Stannites CLP MIF L

CLP MIF P . . . Stannate (IV) compounds, stannic oxide, tin dioxide
MJ . . Stannates, tin oxides
. Compounds with oxygen & hydrogen
MKH L . . Stannous hydroxide, tin (II) hydroxide
MQ . Compounds with sulphur
MQJ HL . . Stannous sulphide, tin (II) sulphide
MQJ HP . . Stannic sulphide, tin (IV) sulphide
MQM . Compounds with sulphur & oxygen
MQM IE . . Salts
MQM IFP . . . Stannic sulphate
MV . Compounds with chlorine
MVJ HL . . Stannous chloride, tin salt
MVJ HP . . Stannic chloride
CLQ Lead, plumbum
HL . Divalent lead, plumbous compounds
HP . Tetravalent lead, plumbic compounds
LMM . Compounds with carbon & oxygen
. . Salts
LMM IFL . . . Plumbous carbonate, white lead
LS . Compounds with nitrogen
LVM . . Compounds with nitrogen & oxygen
. . . Salts
LVM IFL . . . . Plumbous nitrate
M . Compounds with oxygen
MIE . . Salts
MIF L . . . Plumbites
MIF P . . . Plumbates
MJH L . . Plumbous oxide, lead monoxide, litharge
MJH P . . Plumbic oxide, lead dioxide, anhydrous plumbic acid, brown lead oxide
MJH Q . . Lead tetroxide, lead orthoplumbate, lead oxide red, red lead
MQ . Compounds with sulphur
MQJ HL . . Plumbous sulphide, galena
MQM . Compounds with sulphur & oxygen
. . Salts
MQM IFL . . . Lead sulphate
MT . Compounds with halogens
MTJ . . Lead halides
MVJ HL . . . Plumbous chloride
MVJ HP . . . Plumbic chloride

Nitrogen

Chemistry C
Chemical species CG
Compounds CGH
P-block element compounds CLD
Group 14 compounds CLL
. . . . Plumbic chloride CLQ MVJ HP

CLR Group 15 compounds
CLS . Nitrogen
* Nb: notation for nitrogen is spread over CLS/CLV.
. . Monovalent nitrogen
HJ . . . Nitrous compounds
. . Divalent nitrogen
HL . . . Nitric compounds
HN . . Trivalent nitrogen
IA . . Acids
IBJ . . . Monovalent acids
. . . Trivalent acids
IBN . . . . Hydrazoic acid
* For azides, see CLS IFN.
IE . . Salts
. . . Trivalent
IFN . . . . Azides
. . Compounds with other elements in general
JQ . . . Nitrides
* Compounds with more electronegative elements.
K . . Compounds with hydrogen
KJ . . . Nitrogen hydrides
. . . . Divalent
KJH L . . . . . Hydrazine
KJH N . . . . Trivalent
* Normal retroactive notation is interrupted here in order to give short classmarks to ammonia and ammonium. It is resumed at CLU. For ammonia, use CLS M; for ammonium, use CLT.
M . . . . Ammonia
MGB S . . . . . Cation
* For ammonium, use CLT.
CLT . . . . Ammonium
* Because of the unusual chemical behaviour of this cation, which resembles that of an alkali metal, it is treated here as a quasi-element, albeit a subclass of the nitrogen hydrides.
IE . . . . . Salts
* For specific ammonium salts, see the constituents combining with N & H.
LMM . . . . . Ammonium compounds with carbon & oxygen
LMM IE . . . . . Ammonium salts
LMM IFP . . . . . Ammonium carbonate
NIM . . . . . Ammonium compounds with chromium & oxygen
NIM IFP . . . . . Ammonium chromate

Chemistry C
Group 15 compounds CLR
Nitrogen CLS
Nitrogen hydrides CLS KJ
. . Ammonium compounds with chromium & oxygen CLT NIM
. . . Ammonium chromate CLT NIM IFP

CLT NJL WM . . Ammonium compounds with molybdenum, phosphorus & oxygen
NJL WMI FP . . . Ammonium phosphomolybdate
NOM QM . . Ammonium compounds with iron, sulphur & oxygen
NOM QMI FP . . . Iron ammonium sulphate
CLU Other compounds of nitrogen & hydrogen
* Normal retroactive notation is resumed here after its interruption at CLS KHV N:
* Add to CLU letters KHV P/N following C.
CLV Compounds of nitrogen with other elements
* Add to CLV letters KQ/N following C.
M Compounds with oxygen
MFK . Air
* Treated as a chemical substance. For air as a major component of the Earth's atmosphere see Class DE Earth sciences.
. Acids
MIA . . Oxyacids
. . . Monovalent
MIB J . . . . Hyponitrous acid
MIB K . . . . Nitrous acid
. . . Pentavalent
MIB R . . . . Nitric acid
* For aqua regis, see CMV LSI B.
. . . Heptavalent
MIB SP . . . . Pernitric acid
MIE . Salts
* See also Ammonium salts CLT IE and the note there.
MIF J . . Nitrites
MIF K . . Hyponitrates
MIF L . . Nitrates
MIF SP . . Pernitrates
MJ . Oxides
. . Monovalent
MJH J . . . Nitrous oxide, nitrogen monoxide, dinitrogen oxide, laughing gas
. . Divalent
MJH L . . . Nitric oxide
. . Trivalent
MJH N . . . Nitrogen sesquioxide, dinitrogen pentoxide
. . Tetravalent
MJH P . . . Nitrogen dioxide, nitrogen peroxide, dinitrogen tetroxide, nitrogen tetroxide, liquid dioxide
. . Pentavalent
. . Hexavalent
MJH S . . . Trinitrogen tetroxide

Group 15 compounds

Chemistry C
Group 15 compounds CLR
Nitrogen CLS
. . Compounds with oxygen CLV M
. . . . Hexavalent
. . . . . Trinitrogen tetroxide CLV MJH S

. . . . Heptavalent
CLV MJH SP . . . . . Nitrogen heptoxide
MKM T . . Compounds with oxygen, hydrogen & halogens
MKM TJ . . . Nitrosyl halides
MT . . Compounds of nitrogen with halogens
MU . . . Compounds with fluorine
. . . . Trivalent
MUJ HN . . . . . Nitrogen trifluoride

CLW Phosphorus
. Compounds with other elements in general
JQ . . Phosphides
K . Compounds with hydrogen
. . Cation
KGB S . . . Phosphonium ion
KJ . . Phosphorus hydrides
KJH N . . . Phosphorus hydride, diphosphine
KJH O . . . Phosphine, hydrogen phosphide, phosphoretted hydrogen
M . Compounds with oxygen
MIA . . Oxyacids of phosphorus
MIB N . . . Hypophosphorous acid
MIB O . . . Phosphorous acid
MIB R . . . Phosphoric acid, orthophosphoric acid
MIB RS . . . Hypophosphoric acid
MIB RT . . . Metaphosphoric acid
MIB S . . . Perdiphosphoric acid
MIB SL . . . Permonophosphoric acid
MIB SR . . . Pyrophosphoric acid
MIE . . Salts
MIF N . . . Phosphites
MIF NP . . . Hypophosphites
MIF O . . . Phosphates
MIF P . . . Hypophosphates
MIF RS . . . Orthophosphates
MIF S . . . Metaphosphates
MIF SR . . . Pyrophosphates
MJ . . Phosphorus oxides
MJH IP . . . Phosphorus suboxide
MJH J . . . Phosphorus monoxide
MJH N . . . Phosphorus trioxide, phosphorus oxide
MJH P . . . Phosphorus tetroxide
MJH R . . . Phosphorus pentoxide
MJH S . . . Phosphorus hypothetical oxide
MQ . Compounds with sulphur
MQJ . . Phosphorus sulphides
MT . Compounds with halogens
MTJ HR . . Phosphorus pentahalides

Chemistry C
Chemical species CG
Compounds CGH
Group 15 compounds CLR
Phosphorus CLW
. . Phosphorus pentahalides CLW MTJ HR

CLX Arsenic
. Trivalent arsenic
HN . . Arsenious compounds
. Pentavalent arsenic
HR . . Arsenic compounds
HRJ T . Compounds with metals
JTJ . . Metal arsenides
K . Compounds with hydrogen
KJ . . Hydrides
KJH N . . . Arsenic hydride, arsine
LM . Compounds with carbon
* Most of these are organic; see Organic chemistry CON X.
M . Compounds with oxygen
MIA . . Acids
MIB N . . . Arsenic (III) acid, arsenious acid
MIB R . . . Arsenic (V) acid, arsenic acid, orthoarsenic acid
MIB RT . . . Pyroarsenic acid
MIE . . Salts
MIF N . . . Arsenate (III) salts, arsenites
MIF R . . . Arsenate (V) salts, arsenates, orthoarsenates
MIF RS . . . Metaarsenates
MIF RT . . . Pyroarsenates
MJH N . . Arsenic (III) oxide, arsenious oxide, arsenic trioxide, white arsenic
MJH R . . Arsenic (V) oxide, arsenic oxide, arsenic pentoxide
. Compounds with oxygen & hydrogen
MKJ . . Hydroxides
MKJ HN . . . Arsenious hydroxide
MQ . Compounds with sulphur
MQI E . . Salts
MQI FN . . . Thioarsenites
MQI FP . . . Thioarsenates
MQJ HN . . Arsenious sulphide, arsenic trisulphide, orpiment
MQJ HR . . Arsenic sulphide, realgar
MQJ HRR . . Arsenic pentasulphide
MT . Compounds with halogens
MTJ HN . . Arsenious halides
MTJ HR . . Arsenic halides
V Antimony
. Trivalent antimony
VHN . . Antimonious compounds
. Pentavalent antimony
VHR . . Antimonic compounds
VK . Compounds with hydrogen
VKJ . . Antimony hydride, stibine

Oxygen

Chemistry C
Compounds CGH
Group 15 compounds CLR
. Antimony CLX V
. . Compounds with hydrogen CLX VK
. . . Antimony hydride CLX VKJ

CLX VM . . Compounds with oxygen
VMI E . . . Salts
VMI FN . . . . Antimonites
VMI FR . . . . Pyroantimonates
VMJ HN . . . Antimony (III) oxide, antimony trioxide
VMJ HO . . . Diantimony tetroxide
VMJ HR . . . Antimony (V) oxide, antimony pentoxide
VMQ . . Compounds with sulphur
VMQ JHN . . . Antimony (III) sulphide, antimony trisulphide, stibnite
VMV . . Compounds with chlorine
VMV JHN . . . Antimony (III) chloride, antimony trichloride
VMV JHR . . . Antimony (V) chloride, antimony pentachloride
W . Bismuth
WLS . . Compounds with nitrogen
WLV M . . . Compounds with nitrogen & oxygen
WLV MIF N . . . . Bismuth trinitrate
WM . . Compounds with oxygen
WMJ HN . . . Bismuth trioxide, bismuth sesquioxide, bismuth oxide, bismuth yellow
WMJ HR . . . Bismuth pentoxide
. . Compounds with oxygen & hydrogen
WMK . . . Bismuth hydroxide
WMQ . . Compounds with sulphur
WMQ JHN . . . Bismuth sesquisulphide
WMT . . Compounds with halogens
WMV JHN . . . Bismuth trichloride
WMX JHO . . . Bismuth triiodide

CLY Group 16 compounds, chalcogens
CM . Oxygen
* For air as a chemical substance, see CLV MFK and the note there.
. . Ions
CMG BR . . . Oxyanion
Q . . Allotropes
. . Ionic oxides
CMJ GBR G . . . Peroxides
* With (O3)-2 ion.
GBR J . . . Superoxides
* With (O3)-1 ion.
GBR L . . . Ozonides
* With (O3)- ion.
GCC T . . Stoichiometric oxides

Chemistry C
Chemical species CG
Compounds CGH
Group 16 compounds CLY
Oxygen CM
Stoichiometric oxides CMJ GCC T

Kinds of oxides by valency
* Under different elements, terms like monoxide, dioxide, sesquioxide, etc. may reflect valencies different from those under other elements; eg potassium peroxide (K2O2) is divalent, but magnesium peroxide (MgO2) is tetravalent. So it is not feasible to give here a table of exact equivalents and the valency numbers below only approximate to the oxide numbers given.
* Add to CMJ H letters I/S following CH; eg

CMJ HJ . Monoxides
HL . Dioxides
HN . Trioxides
HR . Pentoxides
HSP . Heptoxides
HY *Kinds of oxides by acid/base relation*
* Add to CMJ letters HY/IF following C; eg
HYP . Neutral
HYV . Amphoteric
. Acids
IA . Oxyacids
. Bases
IC . . Basic oxides
JE . Salts
Q Compounds of O with other elements in general
* Compounds of oxygen with another element are usually subordinated to the other element(s).
T Compounds with metals
TJ . Metal oxides
TJH FK . . Mixed metal oxides
* For spinels, see Mineralogy (DIP) in Class D.
TJH O . . Sesquioxides
CMK Compounds with hydrogen
. Ions
ABR H . . Oxonium ion, hydronium ion, hydroxonium ion
J . Hydroxides
* For water, see CKM O (under hydrogen).
CMM U Compounds with fluorine
UJ . Oxygen fluoride
* See also Difluorine monoxide CMU MJH J

Sulphur

Chemistry C
Chemical species CG
Compounds CGH
Group 16 compounds CLY
Oxygen CM
. . Oxygen fluoride CMM UJ

CMQ Sulphur
HL . Divalent
HN . Trivalent
HU . Binary compounds
. Compounds with other elements in general
J . . Sulphides
JHL . . . Disulphides
JHN . . . Trisulphides
JT . Compounds with metals
. . Double salts
JTM IEW . . . Alums
K . Compounds with hydrogen
. . Salts
KIE Q . . . Acid sulphides
* For hydrogen sulphide, see CKM Q
LML S . Compounds with carbon & nitrogen
LML SIB P . . Thiocyanic acid, rhodanic acid, sulphocyanic acid
LML SIF P . . Thiocyanates, rhodanates, sulphocyanates, thiocyanide
M . Compounds with oxygen
. . Acids
MIA . . . Oxyacids of sulphur
MIB L . . . . Thiosulphuric acid
MIB N . . . . Hyposulphurous acid
MIB P . . . . Sulphurous acid
MIB Q . . . . Pyrosulphurous acid
MIB S . . . . Sulphuric acid
MIB SK . . . . Pyrosulphuric acid
MIB SP . . . . Persulphuric acid, perdisulphuric acid
MIB ST . . . . Polythionic acids
MIE . . Salts
MIF L . . . Thiosulphates
MIF N . . . Hyposulphites
MIF P . . . Sulphites
MIF PQ . . . Bisulphites, hydrosulphites
MIF RR . . . Pyrosulphites
MIF S . . . Sulphates
MIF SQ . . . Bisulphates, hydrogen sulphates
MIF SR . . . Pyrosulphates
MIF SU . . . Persulphates, perdisulphates
MIF SW . . . Polythionates
MJ . . Sulphur oxides
MJH L . . . Sulphur monoxide
MJH N . . . Sulphur sequioxide
MJH P . . . Sulphur dioxide, sulphurous anhydride
MJH R . . . Sulphur trioxide, sulphuric anhydride
MJH S . . . Sulphur heptoxide, perdisulphuric anhydride

Chemistry C
Compounds CGH
Group 16 compounds CLY
Sulphur CMQ
. Compounds with oxygen CMQ M
. . . Sulphur heptoxide CMQ MJH S

CMQ MMU . Compounds with oxygen & fluorine
MMU JHS . . Sulphuryl fluoride
MMV . Compounds with oxygen & chlorine
MMV JHP . . Sulphur (IV) dichloride oxide, thionyl chloride, sulphur oxychloride
MMV JHS . . Sulphur (VI) dichloride dioxide, sulphuryl chloride, sulphonyl chloride, chlorosulphuric acid, sulphuric chloride
MU . Compounds with fluorine
MUJ HS . . Sulphur hexafluoride
MV . Compounds with chlorine
MVJ . . Sulphur chlorides
MVJ HJ . . . Sulphur chloride, sulphur monochloride, sulphur subchloride
CMR Selenium
GQ . Allotropes
. *Compounds with elements in general*
JQ . . Selenides
K . Compounds with hydrogen
* For hydrogen selenide, see CKM RJH J.
LM . Compounds with carbon
* See also Organic chemistry CO
M . Compounds with oxygen
MIA . . Acids
MIB P . . . Selenious acid
MIB S . . . Selenic acid
MIE . . Salts
MIF P . . . Selenites
MIF S . . . Selenates
MJH P . . Selenium dioxide
MJH S . . Selenium trioxide
MT . Compounds with halogens
MTJ . . Selenium halides
MU . . Compounds with fluorine
MUJ HP . . . Selenium tetrafluoride
MV . . Compounds with chlorine
MVJ HJ . . . Selenium monochloride
MVJ HP . . . Selenium tetrachloride
CMS Tellurium
. *Compounds with other elements in general*
JQ . Tellurides
K . Compounds with hydrogen
* For hydrogen telluride, see CKM SJH J.
LM . Compounds with carbon
* See also Organic chemistry CO

Group 17 compounds

Chemistry C
Chemical species CG
Compounds CGH
Group 16 compounds CLY
. Tellurium CMS
. . Compounds with carbon CMS LM

CMS M . . Compounds with oxygen
MIA . . . Oxyacids
MIB P . . . . Tellurous acid
MIB S . . . . Telluric acid, orthotelluric acid, hydrogen tellurate
MIB SP . . . . Pyrotelluric acid
MIB SS . . . . Tetratelluric acid
MIE . . . Salts
MIF P . . . . Tellurites
MIF S . . . . Tellurates
MJ . . . Tellurium oxides
MJH P . . . . Tellurium dioxide
MJH S . . . . Tellurium trioxide
MT . . Compounds with halogens
MTJ . . . Tellurium halides
MU . . . Compounds wuth fluorine
MUJ HS . . . . Tellurium hexafluoride
MV . . . Compounds with chlorine
MW . . . Compounds with bromine
R . Polonium
RM . . Compounds with oxygen
RMT . . Compounds with halogens

CMT Group 17 compounds, halogen compounds
. *Compounds with other elements in general*
JQ . . Halides
. Compounds with metals
JTJ . . Metal halides
K . Compounds with hydrogen
KJ . . Halogen hydrides
CMU . Fluorine
. . Compounds
GH . . . Fluorochemicals
* Usually refers to the fluorocarbons (CTG OUN M).
HJ . . Monovalent fluorine compounds
. . Acids
IA . . . Fluoro acids
IBJ . . . . Hydrofluoric acid
IE . . Salts
IFJ . . . Fluoro salts, fluorides (salts)
. . Compounds with other elements in general
JQ . . . Fluorides
* This term is also used narrowly for the salts.
JQJ . . . . Covalent fluorides
JQL . . . . Ionic fluorides
K . . Compounds with hydrogen
KJ . . . Hydrogen fluoride
* See also Hydrofluoric acid CMU IBJ

Chemistry C
Compounds CGH
Group 17 compounds CMT
Fluorine CMU
. Compounds with hydrogen CMU K
. . Hydrogen fluoride CMU KJ

CMU KY . Compounds with calcium
* For fluorite (fluorspar), see calcium fluoride CKY MUJ HL.
LF . Compounds with boron
* For fluoroborates, see CLF MUI FN.
LM . Compounds with carbon
* For fluorocarbons, see CTG OUN M.
LN . Compounds with silicon
* For fluorosilicates, see under silicon compounds at CLN MU.
M . Compounds with oxygen
MJH J . . Difluorine monoxide
* See also Oxygen fluoride CMM UJ
CMV Chlorine
. *Processes*
DMV . . Chlorination, chloridization
FVV K . Solid mixtures
FVV KM . . Chlorine clathrate
. Acids
* See also Oxoacids of chlorine CMV MIA
IA . . Chloro acids
IBJ . . . Hydrochloric acid (HCl), hydrogen chloride
. Salts
IFJ . . Chloro salts, Chlorides (salts)
. Compounds with other elements in general
JQ . . Chlorides
* See also Chlorides as salts CMV IFJ
K . Chlorine compounds with hydrogen
* For hydrogen chloride, see CMV IBJ.
KM . Chlorine compounds with hydrogen & oxygen
KMP . . Chlorine hydrate
LM . Chlorine compounds with carbon
LS . Chlorine compounds with nitrogen
LSI A . . Acids
LSI B . . . Aqua regia, nitro-hydrochloric acid
* Mixture of nitric acid with hydrochloric acid.
M . Chlorine compounds with oxygen
. . Acids
MIA . . . Oxoacids of chlorine
MIB J . . . . Chloric (I) acid, hypochlorous acid
MIB N . . . . Chloric (III) acid, chlorous acid
MIB Q . . . . Chloric (V) acid, chloric acid
MIB SP . . . . Chloric (VII) acid, perchloric acid
MIE . . Salts
MIF J . . . Hypochlorites
MIF N . . . Chlorites
MIF P . . . Chlorates
MIF SP . . . Perchlorates

Group 17 compounds

Chemistry C
Group 17 compounds CMT
Chlorine CMV
. Chlorine compounds with oxygen CMV M
. . Salts CMV MIE
. . . Perchlorates CMV MIF SP

CMV MJ . . Chlorine oxides
MJH J . . . Chlorine monoxide, dichlorine oxide
* Acid anhydride of chloric (I) acid.
MJH L . . . Chlorine dioxide
MJH P . . . Dichlorine tetroxide
MJH R . . . Chlorine pentoxide
MJH S . . . Chlorine hexoxide
MJH SP . . . Chlorine heptoxide, dichlorine heptoxide
MMU . Chlorine compounds with oxygen & fluorine
MMU J . . Chlorine oxide fluorides
MMU JHS P . . . Chlorine trioxide fluoride, perchloryl fluoride
MQ . Compounds with sulphur
MQI A . . Acids
MQI BN . . . Chlorosulphonic acid, chlorosulphuric acid
. Compounds with other halogens
MT . . Chlorine halides
MU . . Compounds with fluorine
MUJ . . . Chlorine fluorides
MUJ HJ . . . . Chlorine monofluoride
MUJ HN . . . . Chlorine trifluoride
MUJ HR . . . . Chlorine pentafluoride
CMW Bromine
. Acids
IA . . Bromo acids
IBJ . . . Hydrobromic acid
IJ . Complexes
IJI A . . Complex bromoacids
. *Compounds with other elements in general*
JQ . . Bromides
K . Compounds with hydrogen
KJ . . Hydrogen bromide
M . Compounds with oxygen
MIA . . Acids
MIB J . . . Hypobromous acid
MIB R . . . Bromic acid
MIE . . Salts
MIF J . . . Hypobromites
MIF R . . . Bromates
MJ . . Bromine oxides
. Compounds with other halogens
MTJ . . Bromine halides
MUJ . . . Bromine fluorides

Chemistry C
Chemical species CG
Compounds CGH
Group 17 compounds CMT
Bromine CMW
. . . Bromine fluorides CMW MUJ

CMX Iodine
. Acids
IA . . Iodo salts
IBJ . . . Hydriodic acid
IE . Salts
IFJ . . Hydrogen iodide, hydriodic gas, iodides (salts)
. Compounds with other elements in general
JQ . . Iodides
* See also Iodides as salts CMX IFJ
LML S . Compounds with carbon & nitrogen
LML SJ . . Iodine cyanide, cyanogen iodide
M . Compounds with oxygen
MIA . . Oxyacids of iodine
MIB L . . . Hypoiodous acid, iodine hydroxide
MIB R . . . Iodic acid
MIB SP . . . Periodic acid
MIE . . Salts
MIF L . . . Hypoiodates
MIF R . . . Iodates
MIF SP . . . Periodates
MJ . . Iodine oxides
MJH N . . . Iodine sesquioxide
MJH R . . . Iodine (V) oxide, diiodine pentoxide
MQ . Compounds with sulphur
MQJ . . Suphides
MQJ HL . . . Iodine bisulphide, sulphur iodide
MT . Compounds with other halogens
MTJ . . Iodine halides
MUJ . . . Iodine fluorides
MVJ . . . Iodine chlorides
MVJ HN . . . . Iodine trichloride
MWJ . . . Iodine bromides
R Astatine
RMT . Compounds with other halogens

D-block compounds

Chemistry C
Chemical species CG
Compounds CGH
P-block element compounds CLD
Group 17 compounds CMT
. . Compounds with other halogens CMX RMT

CMY Group 18 compounds, inert gases, rare gases, noble gases
FVV KM . Clathrates
GJ . Covalent compounds, molecular compounds
MU . Compounds of inert gases & fluorine
Q . Helium
R . Neon
S . Argon
SIJ . . Complex compounds
SKM . . Compounds with hydrogen & oxygen
SKM P . . . Hydrates of argon
SLF MU . . Compounds with boron & fluorine
SLF MUJ HJ . . . Boron trifluoride argon
T . Krypton
TIJ . . Complex compounds
TKM . . Compounds with hydrogen & oxygen
TKM P . . . Hydrates of krypton
TLM . . Compounds with carbon
TMU . . Compounds with fluorine
TMU JHP . . . Krypton tetrafluoride
U . Xenon
* Most interactive of the inert gases.
UKM . . Compounds with hydrogen & oxygen
UKM P . . . Hydrates of xenon
ULM . . Compounds with carbon
* See Organic compounds CO
UM . . Compounds with oxygen
UMJ HS . . . Xenon trioxide
UMU . . Compounds with fluorine
UMU G . . . Xenon fluorides
UMU GHL . . . . Xenon difluoride
UMU GHP . . . . Xenon tetrafluoride
UMU GHS . . . . Xenon hexafluoride
UNS RMU . . Compounds with platinum & fluorine
UNS RMU JHS . . . Xenon platinum hexafluoride
V . Radon
VMU . . Compounds with fluorine
VMU GHP . . . Radon tetrafluoride

Chemistry C
Chemical species CG
Compounds CGH
P-block element compounds CLD
. . . . Radon tetrafluoride CMY VMU GHP

CNA D-block compounds, transition compounds, transition metals compounds
GYN . Interstitial compounds
CNB . Group 3 compounds, rare earth metals compounds
S . . Scandium
SM . . . Compounds with oxygen
SMI A . . . . Oxyacids
SMI E . . . . Oxyacid salts
SMJ . . . . Oxides of scandium
SMT . . . Compounds with halogens
SMT J . . . . Halides of scandium
T . . Yttrium
TM . . . Compounds with oxygen
TMJ . . . . Yttrium oxide
TMQ M . . . Compounds with sulphur & oxygen
TMQ MIF S . . . . Yttrium sulphate
TMV . . . Compounds with chlorine
CND . Group 4 compounds
CNE . . Titanium
. . . Trivalent titanium
HN . . . . Titanous compounds
. . . Tetravalent titanium
HP . . . . Titanic compounds
HS . . . Hexavalent titanium
K . . . Compounds with hydrogen
KJ . . . . Titanium hydride
LF . . . Compounds with boron
LFJ . . . . Titanium boride
LM . . . Compounds with carbon
LMJ . . . . Titanium carbide
LS . . . Compounds with nitrogen
LSJ . . . . Titanium nitride
M . . . Compounds with oxygen
MIE . . . . Salts
MIF P . . . . . Titanates
MJ . . . . Titanium oxides
MJH L . . . . . Titanium monoxide
MJH N . . . . . Titanium oxide, titanium sesquioxide
MJH P . . . . . Titanium dioxide, titanic hydride, titanium(IV) oxide, titania, titanium white
MJH S . . . . . Titanium trioxide, titanium peroxide
MQM . . . Compounds with sulphur & oxygen
MQM IFN . . . . Titanous sulphate, titanium sesquisulphate
MQM IFP . . . . Titanium sulphate, titanic sulphate, titanyl sulphate

Group 5 compounds

Chemistry C
D-block compounds CNA
Group 4 compounds CND
Titanium CNE
. Compounds with sulphur & oxygen CNE MQM
. . Titanium sulphate CNE MQM IFP

CNE MT . Compounds with halogens
MTJ . . Titanium halides
MUJ . . . Titanium fluorides
MVJ . . . Titanium chlorides
MVJ HN . . . . Titanium trichloride, titanous chloride
MVJ HP . . . . Titanium tetrachloride, titanic chloride
CNF Zirconium
K . Compounds with hydrogen
KJ . . Zirconium hydride
LF . Compounds with boron
LFJ . . Zirconium boride, zirconium diboride
LM . Compounds with carbon
LMJ . . Zirconium carbide
LNM . Compounds with silicon & oxygen
LNM J . . Zircon
* See also Mineralogy DIP in Class D
LS . Compounds with nitrogen
LSJ . . Zirconium nitride
LWM K . Compounds with phophorus, oxygen & hydrogen
LWM KIF L . . Zirconium phosphate, zirconium orthophosphate, basic zirconium phosphate
M . Compounds with oxygen
MIF P . . Zirconates
MJ . . Zirconium oxide, zirconium dioxide, zirconic anhydride, zirconia
MK . Compounds with oxygen & hydrogen
MKJ . . Zirconium hydroxide
MT . Compounds with halogens
MVJ . . Zirconium chlorides
MVJ HP . . . Zirconium tetrachloride
Q Hafnium
QLM . Compounds with carbon
QLM J . . Hafnium carbide
QM . Compounds with oxygen
. . Ions
QMG BRU . . . Hafnyl ion
QMJ . . Hafnium oxides
QMT . Compounds with halogens
QMV J . . Chlorides
QMV JHP . . . Hafnium tetrachloride

Chemistry C
Chemical species CG
Compounds CGH
D-block compounds CNA
Group 4 compounds CND
. . . . Hafnium tetrachloride CNF QMV JHP

CNG Group 5 compounds
* For Dubnium, see CNY XEC
Q . Vanadium
QM . . Compounds with oxygen
QMI A . . . Vanadic acids
QMI BR . . . . Vanadic acid
QMI E . . . Salts
QMJ . . . Oxides
QMJ HN . . . . Vanadium trioxide, vanadium sesquioxide
QMJ HP . . . . Vanadium tetraoxide
QMJ HR . . . . Vanadium pentoxide, vanadic acid anhydride
QMQ . . Compounds with sulphur
QMQ J . . . Sulphides
QMQ JHR . . . . Vanadium sulphide, vanadic sulphide, vanadium pentasulphide
QMQ M . . Compounds with sulphur & oxygen
QMQ MIF S . . . Vanadium sulphate, vanadic sulphate, vanadyl sulphate
QMU . . Compounds with fluorine
QMU J . . . Vanadium fluorides
QMV . . Compounds with chlorine
QMV J . . . Vanadium chlorides
R . Niobium, columbium
RM . . Compounds with oxygen
RMI BR . . . Niobic acid
RMI FR . . . Niobates
RMJ . . . Oxides
RMT . . Compounds with halogens
RMT J . . . Halides
S . Tantalum
SLM . . Compounds with carbon
SLM J . . . Tantalum carbide
SM . . Compounds with oxygen
SMI BR . . . Tantalic acid
SMI FR . . . Tantalates
SMJ . . . Oxides
SMJ HR . . . . Tantalum oxide, tantalic acid anhydride, tantalum pentoxide
SMT . . Compounds with halogens
SMT J . . . Halides

Group 6 compounds

Chemistry C
Chemical species CG
Compounds CGH
D-block compounds CNA
Group 5 compounds CNG
. . . Halides CNG SMT J

CNH Group 6 compounds
CNI . Chromium
. . Divalent chromium
HL . . . Chromous compounds
. . Trivalent
HN . . . Chromic compounds
IN . . Complex compounds
. . . With chlorine & water
INM VKM O . . . . Dichlorotetraaquachromium
LM . . Compounds with carbon
LMJ . . . Chromium carbide
LMM . . Compounds with carbon & oxygen
LMM J . . . Chromium carbonyl
M . . Compounds with oxygen
MIA . . . Acids
MIB T . . . . Chromic acid
. . . Salts
MIE . . . . Chromates
MIF S . . . . . Chromates (VI)
MIF SL . . . . . Dichromates
MJ . . . Oxides
MJH L . . . . Chromous oxide
MJH N . . . . Chromic oxide
MJH S . . . . Chromic trioxide, chromic anhydride
MK . . Compounds with oxygen & hydrogen
MKJ HL . . . Chromous hydroxide
MKJ HN . . . Chromic hydroxide
MMV . . Compounds with oxygen & chlorine
MMV J . . . Chromyl chloride, chromium oxychloride
MQ . . Compounds with sulphur
MQJ HN . . . Chromium sesquisulphide
MQM . . Compounds with sulphur & oxygen
MQM JHL . . . Chromous sulphate
MQM JHN . . . Chromic sulphate
MU . . Compounds with fluorine
MUJ . . . Fluorides
MV . . Compounds with chlorine
MVJ . . . Chlorides
MVJ HL . . . . Chromous chloride
CNJ . Molybdenum
HIK . . Zerovalent molybdenum compounds
HL . . Divalent compounds
HN . . Trivalent compounds
HP . . Tetravalent compounds
HR . . Pentavalent compounds
HS . . Hexavalent compounds
LMM . . Compounds with carbon & oxygen
LMM J . . . Molybdenum carbonyl
LN . . Compounds with silicon
LNJ . . . Molybdenum disilicide

Chemistry C
D-block compounds CNA
Group 6 compounds CNH
. Molybdenum CNJ
. . Compounds with silicon CNJ LN
. . . Molybdenum disilicide CNJ LNJ

CNJ M . . Compounds with oxygen
MIB S . . . Molybdic acid
MIF S . . . Molybdates
MJ . . . Oxides
MJH N . . . . Molybdenum sesquioxide
MJH P . . . . Molybdenum dioxide
MJH S . . . . Molybdenum trioxide
MQ . . Compounds with sulphur
MQJ HR . . . Molybdenum disulphide, molybdic sulphide
MV . . Compounds with chlorine
MVJ HR . . . Molybdenum pentachloride
CNK . Tungsten, wolfram
HP . . Tetravalent tungsten
HS . . Hexavalent
LF . . Compounds with boron
LFJ . . . Tungsten boride
LM . . Compounds with carbon
LMJ . . . Tungsten carbide
M . . Compounds with oxygen
MIA . . . Acids
MIB T . . . . Tungstic acid, wolframic acid
MIE . . . Salts
MIF T . . . . Tungstates
MJ . . . Oxides
MJH S . . . . Tungstic oxide, tungstic anhydride, tungstic trioxide, anhydrous wolframic oxide
MMV . . Compounds with oxygen & chlorine
MMV J . . . Tungsten oxychloride
MQ . . Compounds with sulphur
MQJ . . . Tungsten disulphide
MT . . Compounds with halogens
MTJ . . . Halides
MV . . . . Compounds with chlorine
MVJ HS . . . . . Tungsten hexachloride
CNL Group 7 compounds
CNM . Manganese
. . Divalent manganese
HL . . . Manganous compounds
. . Trivalent
HN . . . Manganic compounds
HP . . Tetravalent
HS . . Hexavalent
HSP . . Heptavalent

Group 7 compounds

Chemistry C
Compounds CGH
D-block compounds CNA
Group 7 compounds CNL
Manganese CNM
. Heptavalent CNM HSP

CNM JQ . *Compounds with other elements in general*
LMM . . Compounds with carbon & oxygen
LMM IFL . . . Manganous carbonate
M . . Compounds with oxygen
MIA . . . Oxyacids
MIB S . . . . Manganic acid
MIB SL . . . . Permanganic acid
MIE . . . Salts
MIF P . . . . Manganites
MIF S . . . . Manganates
MIF SL . . . . Permanganates
MJ . . . Oxides
MJH L . . . . Manganous oxide, manganese monoxide
MJH N . . . . Manganic oxide
MJH P . . . . Manganese dioxide, manganese peroxide, manganese binoxide, manganese black, battery manganese
MJH S . . . . Manganese trioxide
MK . . . Compounds with oxygen & hydrogen
MKJ . . . . Hydroxides
MKJ HL . . . . . Manganous hydroxide, manganese hydroxide
MKJ HN . . . . . Manganic hydroxide, hydrated manganic hydroxide
MQ . . . Compounds with sulphur
MQJ HL . . . . Manganous sulphide, manganese sulphate
MT . . Compounds with halogens
MTJ . . . Halides
MUJ . . . Fluorides
MVJ . . . Chlorides
MVJ HL . . . . Manganous chloride
Q Technetium, masurium
QHP . Tetravalent technetium
QHS L . Heptavalent
QM . Compounds with oxygen
QMI E . . Salts
QMI FSQ . . . Pertechnetates
QMJ . . Oxides
QMJ HP . . . Technetium (IV) oxide
QMJ HSP . . . Technetium (VII) oxide
QMQ . Compounds with sulphur
QMQ J . . Sulphides
QMQ JHS P . . . Technetium sulphide

Chemistry C
Compounds CGH
D-block compounds CNA
Group 7 compounds CNL
. Technetium CNM Q
. . . . Technetium sulphide CNM QMQ JHS P

CNM R . Rhenium
RHP . . Tetravalent rhenium
RHS . . Hexavalent
RHS P . . Heptavalent
RM . . Compounds with oxygen
RMI A . . . Acids
RMI BSP . . . . Perrhenic acid
RMI E . . . Salts
RMI FSP . . . . Perrhenates
RMJ . . . Rhenium oxides
RMJ HP . . . . Rhenium dioxide
RMJ HS . . . . Rhenium trioxide
RMJ HSP . . . . Rhenium heptoxide
RMT . . Compounds with halogens
RMT J . . . Halides
CNN Groups 8/10 compounds
* Treated as one group (8) in the older numbering systems.

P Group 8 compounds
. Selective aggregates
R . . Ruthenium-rhodium-palladium group
* For ruthenium, see CNO R; for rhodium, see CNQ R; for palladium, see CNS Q.
S . . Osmium-indium-platinum group
* For osmium, see CNO S; for indium, see CNQ S; for platinum, see CNS R.
CNO . Iron
. . Divalent iron
HL . . . Ferrous compounds, iron (II) compounds
. . Trivalent
HN . . . Ferric compounds, iron (III) compounds
HP . . Tetravalent
HS . . Hexavalent
IN . . Complex compounds
INL V . . . Cyano ligand
JQ . . *Compounds with other elements in general*
LM . . Compounds with carbon
LMJ . . . Iron carbide
* An interstitial carbide.
LMK . . Compounds with carbon & hydrogen
* For ferrocene (C10H10Fe), see CSU QAP OA.
LML S . . Compounds with carbon & nitrogen
LML SIA . . . Acids
LML SIB L . . . . Ferrocyanic acid, hydroferrocyanic acid
LML SIB N . . . . Ferricyanic acid
LML SIJ . . . Complex cyanides of iron
. . . . Salts
LML SIJ IFL . . . . . Ferrocyanides, cyanoferrates (II), hexacyanoferrates (II)

Group 8 compounds

Chemistry C
Group 8 compounds CNN P
Iron CNO
. Compounds with carbon & nitrogen CNO LML S
. . Complex cyanides of iron CNO LML SIJ
. . . . Ferrocyanides CNO LML SIJ IFL

CNO LML SIJ IFN . . . . Ferricyanides, cyanoferrates (III), hexacyanoferrates (III)
. . Cyanogen
LML SJH J . . . Cyanoferrates
LML VM . Compounds with carbon, nitrogen & oxygen
LML VMI E . . Salts
LML VMI FR . . . Pentacyanonitrosylferrate, nitroprusside
LMM . Compounds with carbon & oxygen
LMM IE . . Salts
LMM IFL . . . Ferrous carbonate, iron (II) carbonate
LMM JHM . . Carbonyls
LMM JHM P . . . Iron dodecacarbonyl
LMM JHM R . . . Iron pentacarbonyl, iron carbonyl
LMM JHM RL . . . Iron nonacarbonyl
LS . Compounds with nitrogen
LVL MMQ . . Compounds with nitrogen, carbon & sulphur
. . . Salts
LVL MMQ IFN . . . . Iron (III) thiocyanates
LVM . . Compounds with nitrogen & oxygen
. . . Ions
LVM GIB R . . . . Iron nitrosyls
LVM IE . . . Salts
LVM IFL . . . . Ferrous nitrate, iron (II) nitrate
LVM IFN . . . . Ferric nitrate, iron (III) nitrate
LWM . Compounds with phosphorus & oxygen
LWM IFN . . Iron (III) phosphate
M . Compounds with oxygen
. . Ions
MGB R . . . Oxyanions of iron
. . Salts
MIF N . . . Ferrates
MIF P . . . Ferrates (III)
MIF S . . . Ferrates (IV), perferrates
MJ . . Oxides
MJH L . . . Ferrous oxide, iron (II) oxide
MJH M . . . Tri-iron tetroxide, ferrosoferrioxide, triferric tetroxide
* Contains Fe (II) and Fe (III).
MJH N . . . Ferric oxide, iron (III) oxide
MJT Compounds with oxygen & other metals
MJT J . Mixed metal oxides of iron
* For specific metals, see the metal; eg, Strontium ferrate (Sr2FeO4) CLA NOM IFN.
MK . Compounds with oxygen & hydrogen
MKJ . . Hydroxides
MKJ HL . . . Ferrous hydroxide, iron (II) hydroxide
MKJ HN . . . Iron (III) hydroxide

Chemistry C
D-block compounds CNA
Group 8 compounds CNN P
Compounds with oxygen & other metals CNO MJT
. Compounds with oxygen & hydrogen CNO MK
. . . Iron (III) hydroxide CNO MKJ HN

CNO MQ . Compounds with sulphur
MQJ . . Sulphides
MQJ HL . . . Ferrous sulphide
MQJ HP . . . Ferrous disulphide
MQM . Compounds with sulphur & oxygen
MQM IFL . . Ferrous sulphate, iron (II) sulphate
. . . Hydrate
MQM IFL KMP . . . . Heptahydrate ferrous sulphate, green vitriol, copperas
MQM IFN . . Ferric sulphate, iron (III) sulphate
MV . Compounds with chlorine
MVJ . . Chlorides
MVJ HL . . . Ferrous chloride, iron (II) chloride
MVJ HN . . . Ferric chloride, iron (III) chloride
MVM With chlorine & oxygen
MVM IFN . Iron (III) perchlorate
R Ruthenium
RIL . Coordination compounds
RM . Compounds with oxygen
RMI E . . Salts
RMI FS . . . Ruthenates
RMI FSQ . . . Perruthenates
RMJ . . Oxides
RMJ HP . . . Ruthenium dioxide
RMJ HSQ . . . Ruthenium tetroxide
. Compounds with halogens
RMT J . . Halides
RMV J . . Chlorides
RMV JHN . . . Ruthenium chloride, ruthenic chloride, ruthenium sesquichloride
S Osmium
SIL . Coordination compounds
SM . Compounds with oxygen
SMI BS . . Osmic acid
SMI FSJ . . Osmates
SMJ . . Oxides
SMJ HP . . . Osmium dioxide
SMJ HSP . . . Osmium oxide, osmium tetroxide, osmic acid anhydride

D-block compounds

Chemistry C
Chemical species CG
Compounds CGH
D-block compounds CNA
Group 8 compounds CNN P
. . . . Osmium oxide CNO SMJ HSP

CNP Group 9 compounds
CNQ . Cobalt
. . Divalent cobalt
HL . . . Cobaltous compounds
. . Trivalent compounds
HN . . . Cobaltic compounds
IL . . Coordination compounds
JQ . . *Compounds with other elements in general*
JT . . Compounds with metals
JTH FK . . . Cobalt alloys
* For alloys in Chemical technology, see VL.
LML S . . Compounds with carbon & nitrogen
LML SIE . . . Salts
LML SIF L . . . . Cobaltous cyanide
LML SIF M . . . . Cobaltocyanides
LML SIF Q . . . . Cobaltic cyanide
LS . . Compounds with nitrogen
LSK . . Compounds with nitrogen & hydrogen
LSM . . . Ammonia
LSM MV . . . . With ammonia & chlorine
LSM MVJ HP . . . . . Tetraamminedichlorocobalt
LVM . . . Compounds with nitrogen & oxygen
LVM IE . . . . Salts
LVM IFL . . . . . Cobaltous nitrate, cobalt nitrate
M . . Compounds with oxygen
MJ . . . Oxides
MJH L . . . . Cobaltous oxide
MJH N . . . . Cobaltic oxide
MK . . Compounds with oxygen & hydrogen
MKJ HL . . . Cobaltous hydroxide
MKJ HN . . . Cobaltic hydroxide
MQ . . Compounds with sulphur
MQJ HL . . . Cobaltous sulphide
MTJ . . Cobalt halides
MU . . . Compounds with fluorine
MUJ HN . . . . Cobalt trifluoride, cobalt fluoride
MV . . . Compounds with chlorine
MVJ HL . . . . Cobaltous chloride, cobalt chloride
R . Rhodium
RHN . . Trivalent rhodium
RIL . . Coordination compounds
RM . . Compounds with oxygen
RMJ HN . . . Rhodium oxide, rhodium sesquioxide
RMK . . Compounds with oxygen & hydrogen
RMK JHN . . . Rhodium hydroxide
RMT J . . Rhodium halides
RMV . . . Compounds with chlorine
RMV JHN . . . . Rhodium chloride, rhodium trichloride

Chemistry C
Compounds CGH
D-block compounds CNA
Group 9 compounds CNP
. Rhodium CNQ R
. . . . Rhodium chloride CNQ RMV JHN

CNQ S . Iridium
SIL . . Coordination compounds
SM . . Compounds with oxygen
SMJ HN . . . Iridium oxide
SMJ HP . . . Iridium dioxide
SMV . . Chlorides
SMV JHP . . . Iridic chloride, iridium chloride, iridium tetrachloride
CNR Group 10 compounds
CNS . Nickel
. . Divalent nickel
HL . . . Nickelous compounds
. . Trivalent
HN . . . Nickelic compounds
LML S . . Compounds with carbon & nitrogen
. . . Cyanogen compounds
LML SIF L . . . . Nickel cyanide
LMM . . Compounds with carbon & oxygen
LMM IE . . . Salts
LMM IFL . . . . Nickel carbonate
LMM IJ . . . Complex compounds
M . . Compounds with oxygen
MJ . . . Oxides
MJH L . . . . Nickel monoxide, nickel oxide, nickelous oxide, green nickel oxide
MJH N . . . . Nickel sesquioxide
MK . . Compounds with oxygen & hydrogen
MKJ HL . . . Nickel hydroxide
MQ . . Compounds with sulphur
Q . Palladium
QIL . . Coordination compounds
QM . . Compounds with oxygen
QMJ HL . . . Palladous oxide, palladium monoxide
QMJ HN . . . Palladium sesquioxide
QMJ HP . . . Palladium dioxide
QMV . . Compounds with chlorine
QMV IE . . . Salts
QMV IFL . . . . Palladium chloride, palladium bichloride, palladous chloride
QMV IFM . . . . Chlorine palladates
QMV IL . . . Coordination compounds
R . Platinum
RIL . . Coordination compounds
RM . . Compounds with oxygen
RMJ . . . Oxides
RMJ HL . . . . Platinum oxide, platinous oxide, platinum monoxide
RMJ HN . . . . Platinum dioxide, platinic oxide
RMQ . . Compounds with sulphur
RMQ JHL . . . Platinum sulphide

CNSRMTJ

CNUSMWJHL

Group 11 compounds

Chemistry C
Compounds CGH
D-block compounds CNA
Group 10 compounds CNR
. . Compounds with sulphur CNS RMQ
. . . Platinum sulphide CNS RMQ JHL

. . Compounds with halogens
CNS RMT J . . . Halides
RMV . . . Compounds with chlorine
RMV IA . . . . Acids
RMV IBL . . . . . Tetrachloroplatinic acid
RMV IBP . . . . . Hexachloroplatinic acid, chloroplatinic acid, platinic chloride (acid)
RMV IE . . . . Salts
RMV IFL . . . . . Tetrachloroplatinates
RMV IFP . . . . . Hexachloroplatinates
RMV JHL . . . . Platinum chloride, platinum dichloride, platinous chloride
RMV JHP . . . . Platinum tetrachloride, platinum (IV) oxide

CNT Group 11 compounds, coinage metal compounds
CNU . Copper
. . Monovalent
HJ . . . Cuprous compounds
. . Divalent
HL . . . Cupric compounds
IN . . Coordination compounds
INK MO . . . With water ligand
INK MOV . . . . Hexaaquacopper (II)
INM V . . . With chlorine ligand
INM VT . . . . Tetrachlorocopper (II)
LML S . . Compounds with carbon & nitrogen
. . . Ions
LML SGB RV . . . . Tetrahedral tetracyanocuprate (I) anion
. . . Salts
LML SIE . . . . Copper cyanides
LML SIF J . . . . . Cuprous cyanide
LML SIF L . . . . . Cupric cyanide, copper cyanide
LMM K . . Compounds with carbon, oxygen & hydrogen
LMM KIF L . . . Copper carbonate, cupric carbonate, basic copper carbonate, mineral green, artificial malachite
LS . . Compounds with nitrogen
LSM . . . With ammonia
LSM JHP . . . . Cuprammonium, tetraamminecopper (II)
M . . Compounds with oxygen
MJH L . . . Cuprous oxide, copper (I) oxide, red copper oxygen
MJH N . . . Cupric oxide, copper (II) oxide, black copper oxide

Chemistry C
D-block compounds CNA
Group 11 compounds CNT
Copper CNU
. Compounds with oxygen CNU M
. . Cupric oxide CNU MJH N

CNU MK . Compounds with oxygen & hydrogen
MKJ HN . . Cupric hydroxide, copper hydroxide
MQ . Compounds with sulphur
MQJ HL . . Cuprous sulphide
MQJ HN . . Cupric sulphide, copper sulphide
MQM . Compounds with sulphur & oxygen
MQM IFJ . . Cuprous sulphate, copper (I) sulphate
MQM IFL . . Cupric sulphate, copper (II) sulphate
MQM IFL KMP . . Copper (II) sulphate pentahydrate, blue vitriol
MQM LS . With sulphur, oxygen & nitrogen
MQM LT . . With ammonium
MQM LTI F . . . Green copper ammonium sulphate
MV . Compounds with chlorine
MVJ HJ . . Cuprous chloride, copper chloride, resin of copper
MVJ HL . . Cupric chloride
MVM . With chlorine & oxygen
MVM IFL . . Cupric perchlorate
S Silver
. Univalent silver
SHJ . . Argentous compounds
. Divalent
SHL . . Argentic compounds
SLM LS . Compounds with carbon & nitrogen
SLM LSJ . . Silver cyanide
SLS . Compounds with nitrogen
SLS M . . With ammonia
SLV M . . Compounds with nitrogen & oxygen
SLV MIF J . . . Silver nitrate
SLW M . Compounds with phosphorus & oxygen
SLW MIF J . . Silver phosphate, silver orthophosphate
SM . Compounds with oxygen
SMJ HJ . . Silver oxide
SMJ HL . . Argentic oxide, silver suboxide
SMQ . Compounds with sulphur
SMQ JHJ . . Silver sulphide
SMR . Compounds with selenium
SMR JHJ . . Silver selenide
SMT . Compounds with halogens
SMU . . Compounds with fluorine
SMU JHJ . . . Silver fluoride, tachiol
SMU JHL . . . Argentic fluoride
SMV . . Compounds with chlorine
SMV JHL . . . Silver chloride
SMW . . Compounds with bromine
SMW JHL . . . Silver bromide

Group 12 compounds

Chemistry C
Compounds CGH
D-block compounds CNA
Group 11 compounds CNT
. Silver CNU S
. . . . Silver bromide CNU SMW JHL

CNU T . Gold
. . Univalent gold
THJ . . . Aurous compounds
. . Divalent
THL . . . Auric compounds
TLM LS . . Compounds with carbon & nitrogen
TLM LSI BL . . . Cyanauric acid
TLM LSI FJ . . . Cyanaurites
TLM LSI FL . . . Cyanaurates
TLM LSJ HJ . . . Aurous cyanide
TLM LSJ HL . . . Auric cyanide
TM . . Compounds with oxygen
TMI FL . . . Aurates
TMJ HJ . . . Aurous oxide
TMJ HN . . . Gold oxide, auric oxide, gold trioxide
TMK . . Compounds with oxygen & hydrogen
TMK JHL . . . Auric hydroxide
TMK JHN . . . Gold hydroxide
TMV . . Compounds with chlorine
TMV IBL . . . Chlorauric acid
TMV IFL . . . Chloraurates
TMV JHJ . . . Aurous chloride
TMV JHL . . . Auric chloride

CNV Group 12 compounds
. Selective aggregates
S . . Zinc-cadmium-mercury group
* For zinc, see CNW; for cadmium, see CNW R; for mercury, see CNX.

CNW . Zinc
LML S . . Compounds with carbon & nitrogen
LML SJ . . . Zinc cyanide
LMM . . Compounds with carbon & oxygen
LMM IFL . . . Zinc carbonate, calamine
LSK . . Compounds with nitrogen & hydrogen
LSM . . . With ammonia
LWM . . Compounds with phosphorus & oxygen
LWM IFL . . . Zinc phosphate
M . . Compounds with oxygen
MJH L . . . Zinc oxide
MJH N . . . Zincates
MK . . Compounds with oxygen & hydrogen
MKJ . . . Zinc hydroxide
MQ . . Compounds with sulphur
MQJ . . . Zinc sulphide
MQM . . Compounds with sulphur & oxygen
MQM IFL . . . Zinc sulphate, white copperas, white vitriol, zinc vitriol
MV . . Compounds with chlorine
MVJ . . . Zinc chloride

Chemistry C
Compounds CGH
D-block compounds CNA
Group 12 compounds CNV
Zinc CNW
. . Zinc chloride CNW MVJ

CNW R Cadmium
RLM LS . Compounds with carbon & nitrogen
RLM LSJ . . Cadmium cyanide
RLS K . Compounds with nitrogen & hydrogen
RLS M . . With ammonia
RM . Compounds with oxygen
RMJ . . Oxides
RMJ HJ . . . Cadmium (I) oxide
RMJ HL . . . Cadmium (II) oxide
RMK . Compounds with oxygen & hydrogen
RMK J . . Cadmium hydroxide
RMQ . Compounds with sulphur
RMQ J . . Cadmium sulphide
RMQ M . Compounds with sulphur & oxygen
RMQ MIF L . . Cadmium sulphate
RMT J . Cadmium halides
RMV J . . Cadmium chloride
RMW J . . Cadmium bromide

CNX Mercury
. Monovalent
HJ . . Mercurous compounds
. Bivalent
HL . . Mercuric compounds
LML S . Compounds with carbon & nitrogen
LML SJH L . . Mercuric cyanide
M . Compounds with oxygen
MJ . . Oxides
MJH J . . . Mercurous oxide
MJH L . . . Mercuric oxide
MQ . Compounds with sulphur
MQJ . . Sulphides
MQJ HJ . . . Mercuric sulphide, cinnabar
MQM . Compounds with sulphur & oxygen
MQM IFJ . . Mercurous sulphate
MV . Compounds with chlorine
MVI L . . Coordination compounds
MVJ . . Chlorides
MVJ HJ . . . Mercurous chloride, calomel
MVJ HL . . . Mercuric chloride, corrosive sublimate
MW . Compounds with bromine
MWJ . . Bromides
MWJ HJ . . . Mercurous bromide, mercury (I) bromide
MWJ HL . . . Mercuric bromide, mercury (II) bromide
MX . Compounds with iodine
MXJ . . Iodides
MXJ HL . . . Mercuric iodide

Actinides

Chemistry C
Chemical species CG
Compounds CGH
D-block compounds CNA
. . . . . Mercuric iodide CNX MXJ HL

CNY F-block compoundsa
Q . Lanthanides
QR . . Lanthanum
QS . . Cerium
QSH N . . . Cerium (III) compounds
QSH P . . . Cerium (IV) compounds
QSJ T . . . Compounds with other metals
QSJ THF K . . . . Mixtures, alloys
QSM . . . Compounds with oxygen
QSM JHP . . . . Cerium dioxide, ceric oxide
QSM QM . . . Compounds with sulphur & oxygen
QSM QMI FP . . . . Cerium sulphate
QSM U . . . Compounds with fluoride
QSM UJ . . . . Cerium fluoride
QT . . Praseodymium
QU . . Neodymium
QUM . . . Compounds with oxygen
QUM J . . . . Neodymium oxide
QUM V . . . Compounds with chlorine
QUM VJ . . . . Neodymium chloride
QW . . Promethium, illinium
QX . . Samarium
QXM . . . Compounds with oxygen
QXM J . . . . Samarium oxide
QY . . Europium
QYM J . . . Oxides
QYM TJ . . . Halides
RA . . Gadolinium
RB . . Terbium
RBL VM . . . Compounds with nitrogen & oxygen
RBL VMI FN . . . . Terbium nitrate
RBM . . . Compounds with oxygen
RBM J . . . . Terbium oxide
RBM V . . . Compounds with chlorine
RBM VJ . . . . Terbium chloride
RC . . Dysprosium
RD . . Holmium
RE . . Erbium
RF . . Thulium
RG . . Ytterbium
RH . . Lutetium, cassiopeium

Chemistry C
Chemical species CG
Compounds CGH
F-block compoundsa CNY
Lanthanides CNY Q
. Lutetium CNY RH

CNY S Actinides (compounds), actinoid compounds
SIL . Coordination complexes
T . Actinium
U . Thorium
* For thorium series, see radioactive series at CAB PXV.
UM . . Compounds with oxygen
UMI E . . . Oxyacid salts of thorium
UMJ . . . Thorium dioxide, thorium oxide, thoria, thorium anhydride
UMV . . Compounds with chlorine
UMV JHP . . . Thorium chloride, thorium tetrachloride
UR . Protactinium
URM J . . Oxides
URM TJ . . Halides
V . Uranium
* For uranium decay series, see CAB PXW.
VK . . Compounds with hydrogen
VKJ . . . Uranium hydride
VLV M . . Compounds with nitrogen & oxygen
VLV MIF S . . . Uranyl nitrate, uranium nitrate, yellow salt
VM . . Compounds with oxygen
. . . Cation
VMG BS . . . . Uranyl cation, uranyl radical
VMI E . . . Uranyl salts
VMJ . . . Oxides
VMJ HP . . . . Uranium dioxide, uranium oxide, uranic oxide, urania
VMJ HR . . . . Triuranium octoxide, uranous-uranic oxide, uranyl uranate
VMJ HS . . . . Uranium trioxide, uranium (VI) oxide, orange oxide
VMQ M . . Compounds with sulphur & oxygen
VMQ MIF S . . . Uranyl sulphate, uranium sulphate
VPP . . Isotopes
VS . Transuranic compounds, transuranium compounds
* See also Transactinides CNY XD
VT . . Neptunium
VTI J . . . Complexes
VTM J . . . Oxides
VTM TJ . . . Halides
W . . Plutonium
WMJ . . . Oxides
WMJ HP . . . . Plutonium oxide
WMT J . . . Halides
WR . . Americium
WS . . Curium
WT . . Berkelium
WV . . Californium
WX . . Einsteinium

Organic chemistry

Chemistry C
Compounds CGH
F-block compoundsa CNY
Actinides CNY S
Transuranic compounds CNY VS
Einsteinium CNY WX

CNY WY Fermium
XA Mendelevium, unnilunium
XB Nobelium
XC Lawrencium
XD Transactinides, post-actinides, superheavy elements
* Elements with atomic number above 103. All of them are unstable and have a very short life.
XEB . Rutherfordium
* Atomic number 104.
XEC . Dubnium
* Atomic number 105.
XED . Seaborgium
* Atomic number 106.
XEE . Bohrium
* Atomic number 107.
XEF . Hassium
* Atomic number 108.
XEG . Meitnerium
* Atomic number 109.
XEH . Darmstatium
* Atomic number 110.
XEK . Roentgenium
* Atomic number 111.
XEL . Copernicum
* Atomic number 112.
XEM . Ununtrium
* Atomic number 113.
XEN . Ununquadrium
* Atomic number 114.
XEP . Ununpentium
* Atomic number 115.
XER . Ununhexium
* Atomic number 116.
XES . Ununseptium
* Atomic number 117.
XET . Ununnoctium
* Atomic number 118.
XEV . Other superheavy elements
* Elements from 113 onwards are known by the systematic IUPAC element names until their names have been agreed on.

Chemistry C
Chemical species CG
Compounds CGH
. . . . . Other superheavy elements CNY XEV

CO Organic chemistry
* Add to CO numbers & letters 2/F following C; eg,
. Reactions
COC WM . . Monosubstitution
WN . . Polysubstitution
. *By state of matter*
COF IL . . Films
NT . . Dispersions
PV . . Low density systems
PW . . High density systems
U . . Liquids
V . . Solids
W . . . Crystalline forms

X . Radicals
Y . . Free radicals
COG . . Functional groups, organic radicals
* Atoms or groups of atoms, acting as a unit and replacing a hydrogen or hydrogens in an organic compound. Their presence imparts important characteristic properties to the compound; eg hydroxyl (-OH), carboxyl (-COOH), amine (-NH2), isocyanide (-CNO).
* See Appendix 2 for instructions on how to derive the classmarks for groups from compounds which contains them. Appendix 2 also gives an A/Z index to the major functional groups.
* Add to COG numbers & letters 2/9,A/W following C; eg,
AHB . . . Functional group region, binding site
. . . *Kinds of functional groups*
* Add to COG G letters A/F following C, using the concepts as specifiers (species-makers); eg,
. . . . *Kinds by bonding*
GAK V . . . . . Double bonded functional groups
GAK W . . . . . Triple bonded functional groups
. . . . *Kinds by molecular structure*
GAO R . . . . . Open chain functional groups
GAO W . . . . . Ring functional groups
. . . . *Kinds by special structure*
GAO XM . . . . . Monofunctional
GAO XP . . . . . Polyfunctional
GAO XQ . . . . . Groups having same function
GAO XR . . . . . With different functions
GAO XS . . . . . Difunctional groups, bifunctional groups
* With two or more different functional groups (eg, amino carbonyl compounds; hydroxycyclohexanone).

Organic chemistry

Organic chemistry CO
Radicals COF X
Functional groups COG
Kinds of functional groups
. Kinds by special structure
. . . . Difunctional groups COG GAO XS

* For specific compounds, cite the different functional groups retroactively; eg COM FJB Acetyl (carbonyl - methyl) is located under carbonyls COM F.

COG GCW . Substituted functional groups
. . *Operations*
GCW HN . . . Polysubstitution
GCW HNP . . . . Double replacement
GCW HP . . . . . Double decomposition, metathesis
. . *Kinds of substituted groups*
. . . *Kinds by position of substituents*
* Aromatic compounds are usually assumed.
GCW JC . . . Ortho substituted
GCW JE . . . Meta substituted
GCW JG . . . Para substituted
GCW JJ . . . Vicinal substituted
GCW JL . . . Asymmetric substituted
GCW JN . . . Symmetric substituted
. . . *Kinds by number of substitutions*
GCW M . . . . Monosubstituted
GCW N . . . . Polysubstituted
GCW P . . . . Disubstituted, bisubstituted
GCW R . . . . Trisubstituted
GCW T . . . . Tetrasubstituted
GCW V . . . . Pentasubstituted
GCW W . . . . Hexasubstituted
GCW X . . . . More than six
Specific functional groups
* For works considering a functional group in its widest application (its reaction mechanisms, bonding, etc) in a number of different compounds. The classes COG IV/NY below take only general works on these groups, embracing their appearance in both acyclic and cyclic organic compounds. So this class excludes, eg, the epoxy group (a cyclic ether) which will always be subordinated to cyclic compounds.
* For a fuller list, in A/Z name order, see Appendix 2.
* Add to COG letters IX/PY following CO: eg,
JA . Alkyl group, aryl group
JB . . Methyl group
LS . Hydroxy group
MF . Carbonyl group, acyl group
MH . Formyl group, aldehyde group
* Methanoyl group is also used, but not preferred.
NT . Amine group
NVN SO . Nitroso group
OXO . Iodoso group

Chemistry C
Chemical species CG
Organic chemistry CO
Radicals COF X
. . . Iodoso group COG OXO

Kinds of organic compounds
* All organic substances are compounds. Do not qualify COH by classes C2/CF (which qualify CO).
* Add to COH letters GB/Y following CGH;
* Add to CO letters IA/IN following CG; eg,
COH GCC O . Stoichiometric
GCC V . Non-stoichiometric
. *Kinds by bonding characteristics*
GCJ . . Covalent compounds
* The commonest form, often assumed.
GCK . . . Coordinate bonded
GCK R . . . Single bonded, saturated
GCK S . . . Multibonded, unsaturated
GCK U . . . . Conjugate bonded
GCK V . . . . Double bonded
GCK W . . . . Triple bonded
GCL . . Ionic, electrovalent
GCL N . . . Resonance bonded
* General works only; for aromatics, see CRA.
. *Kinds by molecular structure*
* For chain structures, see CP Acyclic compounds; for ring structures, see CQ Cyclic compounds; for organic polymers, see CTE.
. *Kinds by variations in structure*
* For Polymers, see CTE.
GCP Y . . Polymorphic
GCR . . Isomers
. *Kinds by reaction properties*
GDC A . . Catalysts
GDC PH . . Addition compounds
GDC PL . . Condensation compounds
GDC W . . Substitution compounds
. *Kinds by specific valency, oxidation state*
J . . Monovalent
L . . Bivalent
. *Kinds by number of constituent elements*
U . . Binary compounds
UT . . Ternary compounds
. *Kinds by electron gain/loss*
Y . . Acids & bases & salts together (organic compounds)
* General works only on these; particular groups of acids, etc, or specific acids, etc go with the group or acid, etc.
COI A . . . Organic acids
* General works only; for carboxylic acids, see COM N; for sulphonic acids, see COO QOM XS..
AR . . . . Basic acids
AS . . . . . Monobasic
C . . . Organic bases
* General works only; note at COH Y applies here also.

Hydrocarbons

Chemistry C
Chemical species CG
Organic chemistry CO
Kinds of organic compounds
. . Acids & bases & salts together COH Y
. . . Organic bases COI C

COI E . . . Organic salts
* General works only; note at COH Y applies here also.
J . . Complex organic compounds
N . . . Specific organic complex compounds & ions
* The notes at CIN apply here also. Specific compounds go under the central atom in the complex and are qualified as explained at CIN. This class takes only the complex ions (the ligands per se) without reference to any particular metal.
* See also the alternative provided at CTB for organometals.

Organic compounds by their constituent elements
* General works only on these, embracing works covering both major basic structures, acyclic and cyclic (CP/CS). Works confined to one of these go under it (at CP Acyclic or CQ Cyclic).
. *Compounds with C, H & O only*
X . Hydrocarbons
* Compounds of carbon and hydrogen alone.
Y . . Saturated hydrocarbons
* Without double bonds.
COJ A . . . Alkanes
B . . . . Methane
C . . . . Ethane
D . . . . Propane
E . . . . Butane
F . . . . Pentane
G . . . . Hexane
H . . . . Heptane
I . . . . Octane
J . . . . Nonane
K . . . . Decane
LA . . . . Undecane
LB . . . . Dodecane
LC . . . . Tridecane
LD . . . . Tetradecane
LE . . . . Pentadecane
LF . . . . Hexadecane
LG . . . . Heptadecane
LH . . . . Octadecane
LJ . . . . Nonadecane
LK . . . . Eicosane
LL . . . . Heneicosane
LM . . . . Docosane
LN . . . . Tricosane
LP . . . . Tetracosane
LQ . . . . Hexacosane
LR . . . . Heptacosane
LS . . . . Octacosane

Chemistry C
Chemical species CG
Organic chemistry CO
Hydrocarbons COI X
Saturated hydrocarbons COI Y
. . Octacosane COJ LS

COJ LT . . Nonacosane
M . . Saturated hydrocarbons with 30 or more carbons
* Use COJ MB for 31, COJ MC for 32, and so on.
X Unsaturated hydrocarbons
* Terms like Alkenes, Propene, etc are used for the compounds; terms like Alkenyl, Propenyl are used for the functional groups derived from them and which occur extensively as qualifications of other compounds.
. *By valency*
XHS . . Carbene, carbenium group, carbenium ion
* Containing bivalent carbon. Exists only as transient compound; simplest example is methylene (=CH2).
COK A . Alkenes, olefins, alkenyl group
B . . Methylene
C . . Ethylene, ethene, olefiant gas, ethenyl group, vinyl group
D . . Propene, propylene, methylethylene, propenyl group, allyl group
E . . Butene, butylene
EGR . . . Isomers
EGU H . . . . Butene-1, alpha-butylene, ethylethylene
EGU J . . . . Butene-2, beta-butylene
EGU K . . . . Methylpropene-2, isobutene, isobutylene
F . . Pentenes
G . . Hexenes
H . . Heptenes

. . Alkenes with 2 or more double bonds
P . . . Polyenes, polyalkenes
Q . . . . Dienes, diolefins, alkadienes
. . . . . *Kinds of dienes by position of double bond*
* General works on these only; do not include their classmarks in those for specific compounds.
QAG KU . . . . . Conjugated diolefins
QAG KYM . . . . . Allenes, cumulated bond diolefins
QAG KYN . . . . . Isolated bond diolefins
. . . . . *Kinds of dienes by constituent elements*
QB . . . . . Isoprene
QD . . . . . Propadiene, allene
QE . . . . . Butadiene
* See also Organic polymers CTE
QEJ B . . . . . Methylbutadiene, isoprene
QF . . . . . Pentadiene
QG . . . . . Hexadiene
QLH . . . . . Octadecadiene

Oxygen with hydrocarbons

Chemical species CG
Organic chemistry CO
Hydrocarbons COI X
. . Alkenes COK A
. . . . . Dienes COK Q
. . . . . Octadecadiene COK QLH

COK R . . . . . Trienes
S . . . . . Four or more
COL A . . Alkynes, acetylene series compounds
C . . . Acetylene, ethyne
D . . . Propyne, allylene, methyl acetylene
E . . . Butyne
M . . Aryl functional groups, functional groups derived from aromatic compounds
* Although these will be subordinated to aromatic compounds, notation is provided here to keep the filing order correct for synthesised classmarks
N . . . Phenyl compounds
O . . . . Benzyl compounds, phenylmethyl compounds

R Oxygen with hydrocarbons (organic compounds)
* Oxygen when part of a hydrocarbon compound; for oxygen organic compounds in general, see COO and the note there.
* The classes COL R/COM P form an exception to the general rule for heteroatoms. When oxygen constitutes a part of the homologous series which begins at COI X/COL P it is not regarded as a heteroatom. Otherwise, it is so regarded (see COO).
RJA . Alkoxy compounds, alkoxy radical compounds
* An alkyl radical joined to a molecule by an O.
RJB . . Methoxy compounds
RJC . . Ethoxy compounds
S . Hydroxy compounds, hydroxyl compounds, hydroperoxy group
* Contain two classes of organic compounds - alcohols (when attached to an alkyl structure) and phenols (when attached to an aromatic structure). For alcohols, see COL T; for phenols, see CRL T.
* Named with prefix hydroxy- or suffix -ol.
T . . Alcohols
* For mercaptans (in which -SH is analogous to -OH) see COO QMX.
TJA . . . Alkanols
TJB . . . . Methyl alcohol, methanol
TJC . . . . Ethyl alcohol, ethanol, grain alcohol
TJD . . . . Allyl alcohol, propanol
. . . *Kinds by bond to which the hydroxyl is attached*
* General works only; do not use when building classmarks of individual alcohols.
TP . . . . Primary alcohols
* The carbon bearing the hydroxyl group is attached to one alkyl.
TS . . . . Secondary alcohols
* The carbon bearing the hydroxyl group is attached to two alkyls.
TT . . . . Tertiary alcohols
* The carbon bearing the hydroxyl group is attached to three alkyls.

Chemical species CG
Organic chemistry CO
Oxygen with hydrocarbons COL R
Hydroxy compounds COL S
. . Kinds by bond to which the hydroxyl is attached
. . . Tertiary alcohols COL TT

. . *Kinds of alcohols by number of OHs*
COL U . . . Monohydric saturated alcohols
* Form an homologous series with the general formula CnH2n+1.OH.
UKC . . . . Ethylene alcohol, vinyl alcohol
V . . . Polyhydric saturated alcohols, polyhydroxy alcohols
W . . . . Dihydric alcohols, diols, glycols
WKC . . . . . Ethylene glycol, glycol, ethanediol, dihydroxyethane, ethanol, dihydroxy alcohol
X . . . . Trihydric alcohols, triols
Y . . . . . Glycerol, trihydroxypropane, glycyl alcohol, trihydroxypropane
COM C Peroxides
E Ethers
* For alkoxy, see COL RJA; for epoxides, see CSS QAO D.
EJB . Dimethyl ethers
F Carbonyl compounds, acyl compounds, carbonyl group
* For inorganic carbonyls, see CLM MJH M.
* For alkanes, see COJ A; for carboxylic compounds, see COM M; for metal carbonyls, see COM TLM MHV M; for carbohydrates, see CTQ.
. *With alkyl*
FJA . . Alkoxycarbonyls, carboxylates, carboxylate group
. . . *With methyl*
FJB . . . . Acetyl compounds, ethanoyl compounds
H . Aldehydes, alkanals
* For formyl group (HCO), see COG MH.
HJB . . Methanal, formaldehyde, formol, methylene oxide
HJC . . Ethanal, acetaldehyde
HJD . . Propanal, propionaldehyde
. . With alcohols
HLT V . . . Hemiacetals
HLT W . . . Acetals, diethoxyethane
K . Ketones, alkanones
* Named with prefix keto- or oxo-, or with suffix -one.
. . Isomers
KGR . . . Pentanone
KGU H . . . . 2-Pentanone, methylpropyl ketone, ethyl acetone
KGU J . . . . 3-Pentanone, diethyl ketone, proprione
KJB . . Propanone, acetone
. . Alcohols
KLT . . . Ketols, ketoalcohols

Carboxylic acids

Organic chemistry CO
Oxygen with hydrocarbons COL R
Carbonyl compounds COM F
. Ketones COM K
. . Alcohols
. . . Ketols COM KLT

. . . Aldehydes
COM KMH . . . . Ketoaldehydes
. . *Ketones by number of keto groups*
KR . . . Polyketones
KS . . . . Diketones
KU . Enols, keto-enols
. . Tautomeric forms
KUG S . . . Keto-enol tautomers
KX . Ketenes, allenes
M Carboxylic acids
* For organic acids in general, see C0I A; for acyl radical, see COG MF; for sulpho-group acids, see COO QOM XS.
* See also amino acids (CON U) under nitrogenous compounds.
MIA JG . Non-polar acids
MIA R . Basic acids
. *By number of carboxyls*
MIA S . . Monocarboxylic acids. monobasic carboxylic acids
MIA SP . . Polycarboxylic acids
* Two or more H atoms may be replaced by basic atoms or by other radicals.
MIA T . . . Dicarboxylic acids, dioic acids, dibasic carboxylic acids
* For acyl radical, see COM F.
MIA U . . . Tricarboxylic acids
MIA V . . . Tetracarboxylic acids
MIA W . . . Pentacarboxylic acids
MIA X . . . Hexacarboxylic acids
. *Kinds of carboxyl compounds by constituent elements*
* Add to COM M letters JA/MK following CO at COJ A/COM K.
MJB . . Methanoic acid, formic acid
MJC . . Ethanoic acid, acetic acid
MJC LS . . . Hydroxyethanoic acid, hydroxyacetic acid, glycolic acid
MJC Q . . . Ethanedioic acid, oxalic acid
MJD . . Propenoic acid, acrylic acid, vinylformic acid
MJD Q . . Propanoic acid, propionic acid, methylacetic acid
MJE . . Butanoic acid, butyric acid, ethylacetic acid, propylformic acid
MJE Q . . Butanedoic acid, succinic acid
MJF . . Pentanoic acid, valeric acid
MJG . . Hexanoic acid, caproic acid
MJG Q . . Gluconic acid, dextronic acid, d-gluconic acid
MJG R . . Hexanedioic acid, adipic acid
MKQ G . . Hexadienoic acid, sorbic acid

Chemical species CG
Organic chemistry CO
Oxygen with hydrocarbons COL R
Carboxylic acids COM M
. Kinds of carboxyl compounds by constituent elements
. . Hexadienoic acid COM MKQ G

COM MKQ LH . . Octadecadienoic acid, linoleic acid, linolic acid
MLP . . Carboxypropyne, tetrolic acid
MLS . . Hydroxycarboxylic acid
MLS JD . . . Lactic acid, alpha-hydroxypropanoic acid
MLS JDS . . . Beta-lactic acid, 3-hydroxypropanoic acid, hydracrylic acid
MLS JDT . . Pyruvic acid, oxopropanoic acid, acetylformic acid, ketopropionic acid, pyoracenic acid
MLS JLH . . Ricinoleic acid, castor-oil acid, hydroxyoctadecanoic acid
MLS JLI . . Ricinostearic acid, gammahydroxytetrolic acid
MLS S . . Malic acid, hydroxysuccinic acid, hydroxybutanedioic acid
MLS T . . Tartaric acid, 2.3-dihydroxybutanedioic acid, dihydroxysuccinic acid
MMH . Carboxaldehydes, carbaldehydes
MMK . Keto acids
N . Salts of carboxylic acids
* See Esters COM P
O . Acid anhydrides
OJC . . Ethanoic anhydride, acetic anhydride
OJE . . Butaneodioic anhydridc, succinic anhydride
P Esters, carboxylic esters
* Derived by condensation in reactions between acid and alcohol.
* Use also for salts of carboxylic acids.
PIP . Inorganic esters
* Product of reaction between alcohol and inorganic acid.
PJB . Methylmethanoate, methylformate
PJC . Methylethanoate, methyl acetate
PN . . Acetates
* See also Lactone (an organic ester) CQM PN
PNJ C . . . Ethyl acetate

Organic compounds with heteroatoms

Chemistry C
Chemical species CG
Organic chemistry CO
Oxygen with hydrocarbons COL R
. . . . Ethyl acetate COM PNJ C

COM Q Organic compounds with heteroatoms
* Organic compounds which include elements other than C,H or O. For heteroatoms in the more commonly used context of non-C or H atoms replacing a C in a basic ring, see Heterocycles CS.
* General works only on these, embracing both the major structures (acyclic and cyclic). Works restricted to one only of the latter go with that, either at CP Alicyclic or at CQ/CS Cyclic.

. *Parts, Properties, Processes, etc*
* Add to classes in COM Q/COP Y numbers & letters 2/MP following CO only when the compound concerned includes heteroatoms; eg, COM TGX D Sandwich structures.

R . *Heteroatom compounds which include hydrocarbons and oxygen*
* The use of hydrocarbons and oxygens from here (as qualifiers of heteroatom compounds) should be restricted to when they appear as members of the homologous series COI X/COM P.
* Hydrogen, carbon and oxygen continue to appear as special heteroatoms when they act as distinct elements rather than as members of the homologous series.
* Add to COM R letters IX/MF following CO; eg,

RIX . . Hydrocarbons
RIY . . . Saturated
RJA . . . . Alkanes
RJX . . . Unsaturated
RLR . . Hydrocarbons with oxygen
RLS . . . Hydroxy
RMF . . . . Carbonyl
RMP . . . . Esters

. *Heteroatom compounds by specific heteroatoms*
* Because of the need to adjust the order of organic compounds so as to accommodate the hydrocarbon/oxygen compounds, the notation used for elements at CGH (compounds in general) and CJ/CNY (inorganic compounds) has had to be adjusted and the letters COM J/NY are changed to COM/COPY. However, their order is exactly the same as in CJ/CNY and the main notational difference is that the initial letters change from J/N to M/PY, to give COM/COPY instead of COJ/CON Y. Apart from this, two small additional changes should be noted:
* (1) When adding one element to another (eg, N + O) use the notation from COM/COP Y, not from CJ/CNY; eg, CON NXW NS Bismuth organic compounds with nitrogen.

Chemistry C
Chemical species CG
Organic chemistry CO
Organic compounds with heteroatoms COM Q
Heteroatom compounds by specific heteroatoms

* (2) C, H and O may sometimes appear as constituents specifying further compounds of the non-C, H or O elements in COM MR/COP Y (see note above at COM R); eg, amines (element + H), nitrosos (element + C) and amide (element + O). For this reason classmarks for H, C & O continue to appear in the sequence COM X/COP.

Organic compounds with specific elements
* Add to COM letters R/Y following CJW;
* Add to COM X letters A/Y following CK; ie, Hydrogen used here, but treated as a special heteroatom (see 3rd note above under Heteroatoms); it is notated COM X, not CON Y.
* Add to CON letters A/Y following CL.
* Add to COO letters A/Y following CM.
* Add to COP letters A/Y following CN; eg,

COM RQ . *Compounds with other elements in general*
* Eg, organic nitrides CON SJM Q.

RR . *Compounds with elements of particular periods*
* For compounds of particular blocks, see the general sequence COM WW/COP Y; eg, organic compounds with P-block elements CON D.

T . Metals (organic compounds), organometallic compounds
* Inorganic classmark is CMT.
* An alternative (not recommended) is provided at CTB for libraries wishing to keep together all the literature on organometals.

. . *By bond structure*
TGX D . . . Sandwich compounds
* For metallocenes, see Heterocyclic compounds CSM TMQ OKK Q.

. . Carbonyls
TLM MHV M . . . Metal carbonyls
TNV Q . . Nitrogen & oxygen with metals

Nitrogen organic compounds

Chemistry C
Chemical species CG
Organic chemistry CO
Organic compounds with heteroatoms COM Q
Organic compounds with specific elements
. . Nitrogen & oxygen with metals COM TNV Q

Heteroatom compounds with specific elements

COM X . Hydrogen as a special heteroatom (organic compounds)
* See 2nd note above under COM R (Heteroatom compounds with C, H & O).
* Classmark for general & inorganic hydrogen is CK.
* Hydrogen is usually implicit throughout organic chemistry.

XQ . Alkali metals (organic compounds)
. . Alcohol derivatives
XQL T . . . Alcoholates, alkoxides
XR . Lithium organic compounds
* Inorganic classmark is CKR.

XS . Sodium organic compounds
* Inorganic classmark is CKS.

XT . Potassium organic compounds
XV . Alkaline earth metals (organic chemistry)
XW . . Beryllium organic compounds
XX . . Magnesium organic compounds
XY . . Calcium organic compounds
CON B . Barium organic compounds
D . P-block elements
F . Boron organic compounds
G . Aluminium organic compounds
J . Thallium organic compounds
M . Carbon as a special heteroatom (organic compounds)
* Inorganic classmark is CLM.
* Carbon is implicit throughout organic chemistry. Use this position only to qualify non-C, -H or -O elements (see notes preceding COI X above); eg, CTG OUN M Fluorocarbon polymers (in which CTG is polymers, OU is fluoro and NM is carbon).

N . Silicon organic compounds, organosilicon compounds
NNS . . Silicon wth nitrogen
NXW . Bismuth organic compounds
NXW NS . . Bismuth with nitrogen
P . Tin organic compounds
Q . Lead organic compounds
R . Group 15 elements
S . Nitrogen organic compounds, nitrogenous organic compounds
* Inorganic classmarks cover CLS/CLV; here, they are CONS/CONV.

Chemistry C
Chemical species CG
Organic chemistry CO
Organic compounds with heteroatoms COM Q
Nitrogen organic compounds CON S

* The notational provision for these is extended by interruptions to the normal retroactive sequence. This is to secure shorter classmarks for major classes such as amines and amino acids. See the notes below at those points where the notation from CLS is interrupted, extended, then later resumed. The Add notes ensure that provision is made for all elements and in the same, consistent order.
* To make clear the continuity of the elements from CJT/CN (which may be used to qualify this class) examples are given which are unlikely to have any literature; eg organic nitrogen compounds with bismuth CON VOY NXW.

. Compounds of N with hydrocarbons & O
* See note at COM X (H as a special heteroatom).

CON SLS . . Hydroxy compounds
SMF . . Carbonyl compounds
SMM . . Carboxylic acids
* For amino acids, see CON U.

SMO . . Acid anhydrides
SMQ . *Compounds with other heteroatoms in general*
SMR . *Compounds with heteroatoms of a given period*
. N compounds with specific heteroatom elements
* Add to CON S letters MS/MX following CO; eg

SMT . . N compounds with metals
SMX . . N compounds with hydrogen as a special heteroatom
SMY . . . Ammonium (organic compounds)
T . . . Amines
* Produced by replacing one or more hydrogen atoms in ammonia (NH3) with an organic group.
* Normal notational synthesis is interrupted here; it is resumed at CON V.

. . . . *By hydrocarbons & oxygen*
TKA . . . . . Vinyl amines, enamine
. . . . . Hydroxy
TLS . . . . . Oximes
. . . . . Aldehydes
TMH . . . . . Aldoximes
. . . . . Ketones
TMK . . . . . Ketoximes
TR . . . . Primary amines, amino compounds
* Replace one H from ammonia (NH3).

TRK C . . . . . Ethylene
TRK CIV M . . . . . Ethylenediamine, diaminoethane, EN
. . . . . Hydroxy
TRL S . . . . . Hydroxylamine

Nitrogen organic compounds

Organic chemistry CO
Nitrogen organic compounds CON S
N compounds with hydrogen as a special heteroatom CON SMX
. . Primary amines CON TR
. . . Hydroxy
. . . . Hydroxylamine CON TRL S

CON TRM M . . . Carboxylic acids
* Normal retroactive synthesis is interrupted here. Normal synthesis is resumed at CON UV.

U . . . . Amino acids, aminocarboxylic acids
* This location is an alternative (not recommended) to collocating amino acids with proteins at CUD.
* If this alternative is taken, general classes of amino acids would file here (at CON U) and be specified as follows:
* Add to CON UA letters A/T following CUD; eg. dipolar amino acids CON UAG KYD; tyrosine CON UP.
* Add to CON U letters E/G following CU at CUE/CUG; eg tyrosine CON UEP.

UAH GKY D . . . Primary amines with other compounds
* Normal retroactive synthesis is resumed here after its interruption at CON TRM M.
* Add to CON UV letters MO/P following CO with the additions indicated below; eg

UVM O . . . . Acid anhydrides
. . . . With additional Ns
UVQ . . . . . Hydrazines, hydrazo compounds
. . . . . Hydroxy
UVQ LS . . . . . Hydroxyhydrazines
UVQ S . . . . . Hydrazones
UVS . . . . Diamines
* Compounds with two amino groups.
* For EDTA, see CON UVT.

UVT . . . . . Ethylenediaminetetraacetic acid, diamino ethane tetraacetic acid, EDTA
UW . . Secondary amines, imines, imino compounds
* For amides see CON VR.

UX . . Tertiary amines
UXO . . . Amine oxides
UYB . . Quaternary amines
V Nitrogen compounds with other elements
* Including those with other nitrogens.
* Normal retroactive synthesis is resumed here after its interruption at CON T.
* Add to CON V letters MX/NY following CO; eg,

VMX Nitrogen with Hydrogen as special heteroatom

Chemistry C
Chemical species CG
Organic chemistry CO
Organic compounds with heteroatoms COM Q
Nitrogen organic compounds CON S
Nitrogen with Hydrogen as special heteroatom CON VMX

CON VNM Nitrogen with Carbon as special heteroatom
VNM C . Cyano (CN), isocyano, cyano group, cyanogen
VNM IA . Acids
VNM IB . . Hydrocyanic acid, formonitrile, hydrogen cyanide, prussic acid
VNM IE . Salts
VNM IF . . Cyanides, nitriles, isonitriles, nitrile group, hydrogen cyanides
Nitrogen with Nitrogen
VNS . Diazo compounds, diazo group (CN2), azo compounds
* For Diazonium and Diazonium salts, see Benzene ring (CR).
* For amides, see CON VR.

VNS IC . Bases
VNS ID . . Amidine
VNS NS . Azides, azide group
* Have 3 Ns.

Nitrogen with Oxygen as special heteroatom
VNS O . Nitroso, nitroso group, hydroximino compounds, oximido compounds
VNS OIA . . Acids
VNS OIB . . . Isocyanic acid (HNCO), cyanic acid, fulminic acid
VNS OIE . . Salts
VNS OIF . . . Cyanates, fulminates
VNS OQ . . Nitro compounds, nitro group (NO2)
VNS OR . . Azoxy compounds, diazo compounds (with 2Ns), azo compounds
VR . . . Amides, carbamoyl group, amido group
* See also Polyamides CTG NVR

VRS . . . . Primary amides
VRT . . . . Secondary amides
VRU . . . . Tertiary amides
VS . . . Imides, imido compounds
* See also Polyimides (-CONRCO) CTG NVS

VT . . . Nitramines
VU . . . Isocyanate
* See also Urethane polymers CTG NVU

VVB Nitrogen with oxygen & hydrogen & other elements
* Add to CON VVB letters MY/P following CO; eg

VVB NB . Nitrogen with oxygen & hydrogen & barium
VVD Nitrogen & O with other elements
* Add to CON VVD letters MT/P following CO.
* Add to CON VVE letters A/Y following COP; eg

VVD NB . Nitrogen with oxygen & barium

Organic compounds with heteroatoms

Chemical species CG
Organic chemistry CO
Organic compounds with heteroatoms COM Q
Nitrogen organic compounds CON S
. N compounds with specific heteroatom elements
. . . Nitrogen with oxygen & barium CON VVD NB

CON VVF . Nitrogen compounds with other elements
* Normal synthetic notation is resumed here after its interruption following CON U.
* Add to CON VV letters Q/X following COO;
* Add to CON VVY letters A/Y following COP; eg

VVQ . . Nitrogen with sulphur
VVY O . . Nitrogen with iron
W Phosphorus organic compounds
COO Oxygen organic compounds as special heteroatoms
* Other than as components of the oxygen compounds at COL R/COM P or of compounds with other elements whose formula puts oxygen after that element; eg, nitroso compounds at CON VNS O file under nitrogen.
* See fifth note preceding COM Q.

Q Sulphur organic compounds
. Sulphur with specific elements
QMQ . . Sulphides (organic compounds)
. . Sulphur with hydrogen
QMX . . . Thiols, mercaptans
* Sulphur analogues of alcohols -OH.
. . . . Esters
QMX MP . . . . . Alkylthio group, thioesters
QNS O . . Sulphur with nitrogen & oxygen
QNV R . . . Sulphonamides
QO . . Sulphur with oxygen alone
QOM Q . . . Sulphoxides
QOM SHN . . . Sulphones
. . Sulphur with oxygen & hydrogen
QOM XQ . . . Sulphenic acids
QOM XR . . . Sulphinic acids
QOM XS . . . Sulphonic acids, sulpho-group (prefix)
R Selenium organic compounds
S Tellurium organic compounds
T Halogen organic compounds, halides (organic compounds)
* Classmark in inorganic chemistry is CMT.
. Alkyl group
TJA . . Haloalkanes, alkohalides
. Carbonyl group
TMF . . Acyl halides, acid halides
. With sulphur
TOQ . . Sulphonyl halides
U . Fluorine organic compounds, fluoro group
UMQ . . Fluorides (organic chemistry)
V . Chlorine organic compounds, chloro group
VMQ . . Chlorides (organic compounds)
W . Bromine organic compounds, bromo group
WMQ . . Bromides (organic compounds)

Chemical species CG
Organic chemistry CO
Organic compounds with heteroatoms COM Q
Halogen organic compounds COO T
. Bromine organic compounds COO W
. . Bromides COO WMQ

COO X . Iodine organic compounds, iodo group
XMQ . . Iodides (organic compounds)
. . Iodine with oxygen
XO . . . Iodoso compounds
XR . Astatine organic compounds
Y Inert gases (organic compounds)
COP A Transition metals organic compounds
AIJ . Complexes
AIJ GKN . . With sigma bonds
* Between carbon & metal atoms.
AIJ GKP . . . With pi bonds
AIJ GKS . . . With multiple bonds
E . Titanium organic compounds
G . Group 5 elements in organic compounds
GQ . Vanadium organic compounds
I . Chromium organic compounds
J . Molybdenum organic compounds
M . Manganese organic compounds
NQ . Lead organic compounds
O . Iron organic compounds
OR . Ruthenium organic compounds
OS . Osmium organic compounds
QR . Rhodium organic compounds
QS . Iridium organic compounds
S . Nickel organic compounds
SQ . Palladium organic compounds
SR . Platinum organic compounds
U . Copper organic compounds
US . Silver organic compounds
W . Zinc organic compounds
X . Mercury organic compounds
Y F-block elements in organic compounds

Acyclic compounds

Chemistry C
Chemical species CG
Organic chemistry CO
Organic compounds by their constituent elements
. . . F-block elements in organic compounds COP Y

Kinds of organic compounds by basic structures

CP . Acyclic compounds, aliphatic compounds, straight chain compounds, linear compounds
* Aliphatic compounds with cyclic constituents are treated as cyclic compounds and called alicyclic; see CQX.
* Add to CP numbers & letters 2/9,A/P following CO; eg,

CPG . . Functional groups

. . *Kinds of acyclics by constituent elements*
* Add to CP letters IX/MPN JC following CO in COI X/COM PNJ C; eg, acyclic hydrocarbons CPI X; CPK B acyclic methylene.

. . . Acyclics with hydrocarbons & oxygen in homologous series
* For carbohydrates, see CTQ.
* Se also Hydrogen as a special heteroatom CPM X; Carbon as a special heteroatom CPN M; Oxygen as a special heteroatom CPO.

CPI X . . . . Acyclic hydrocarbons
Y . . . . . Saturated acyclic hydrocarbons
CPJ A . . . . . Alkanes
XS . . . . . Unsaturated acyclic hydrocarbons
CPK A . . . . . Alkenes
CPL A . . . . . Alkynes, acetylene series
C . . . . . Acetylene, ethyne
R . . . . *Hydrocarbon compounds containing oxygen*
RJA . . . . . Alkoxy group compounds
S . . . . . Hydroxy compounds
T . . . . . Alcohols
* For ethylene glycol, see CPU CLU V.
TJA . . . . . Alkanols
U . . . . . Monohydric
W . . . . . Dihydric
WV . . . . . Ethylene glycol
X . . . . . Trihydric alcohols
Y . . . . . Glycerol, trihydroxypropane
CPM C . . . . . Peroxide
E . . . . . Ethers
F . . . . . Carbonyls
H . . . . . Aldehydes, alkanals
K . . . . . Ketones, alkanones

Chemistry C
Chemical species CG
Organic chemistry CO
Acyclic compounds CP
Carbonyls CPM F
. Ketones CPM K

CPM M . Carboxylic acids
. . *By constituent elements*
MJB . . . Methanoic acid, formic acid
MJC . . . Ethanoic acid, acetic acid
MJD . . . Propanoic acid, propionic acid, methylacetic acid
MJE . . . Butanoic acid, butyric acid, ethylacetic acid, propylformic acid
MJE Q . . . Butanedioic acid, succinic acid
MJF . . . Pentanoic acid, valeric acid
MJG . . . Hexanoic acid, caproic acid
MJG Q . . . Gluconic acid, dextronic acid, d-gluconic acid
MJG R . . . Hexanedioic acid, adipic acid
MKD . . . Propenoic acid, acrylic acid, vinylformic acid
MKQ G . . . Hexadienoic acid, sorbic acid
MKQ LH . . . Octadecadienoic acid, linoleic acid, linolic acid
MLP . . . Carboxypropyne, tetrolic acid
MLS . . . Hydroxycarboxylic acids
MLS JD . . . . Lactic acid, alpha-hydroxypropanoic acid, 2-hydroxypropanoic acid
MLS JDS . . . . Beta-lactic acid, 3-hydroxypropanoic acid, hydracrylic acid
MLS JDT . . . . Pyruvic acid, 2-oxopropanoic acid, acetylformic acid, a-ketopropionic acid, pyroracemic acid
MLS JLH . . . . Ricinoleic acid, castor oil acid, hydroxyoctadecanoic acid, hydroxyoleic acid
MLS JLI . . . . Ricinostearic acid, gammahydroxytetrolic acid
MLS S . . . . Malic acid, hydroxysuccinic acid, 2-hydroxybutanedioic acid
MLS T . . . . Tartaric acid, 2,3-dihydroxybutanedioic acid, dihydroxysuccinic acid
MMH . . . Aldehyde acids
O . Acid anhydrides
P Esters
PN Acetates

Organic chemistry

Chemistry C
Chemical species CG
Organic chemistry CO
Acyclic compounds CP
Hydrocarbon compounds containing oxygen CPL R
. Acetates CPM PN

Acyclic compounds with heteroatoms
* Add to CP letters MQ/PY following CO in COM Q/COM PY so far as applicable; eg,

CPM T . Metals (acyclic compounds)
X . Compounds with hydrogen as special heteroatom
CPN M . Compounds with carbon as special heteroatom
S . Nitrogen acyclic compounds
T . . Amines
TR . . . Primary
TRJ B . . . . Methylamine, monomethylamine, amino methane
TRJ C . . . . Ethylamine
UVQ . . . . Hydrazine
UVQ LS . . . . . Hydroxyhydrazine
UW . . . Secondary amines
UWJ CJB . . . . Methylethylamine
UX . . . Tertiary amines
UXJ B . . . . Trimethylamine, TMA
UYB . . . Quaternary amines
V . . *Nitrogen with other elements*
VNM C . . . Cyano, isocyano, nitriles (group CN compounds)
VNM IA . . . Acids
VNM IB . . . . Cyanic acid, hydrogen cyanate (organic acids)
VNM IE . . . Salts
VNM IF . . . . Cyanides, hydrogen cyanides
. . *With two nitrogens*
VNS . . . Diazo compounds
. . *With three nitrogens*
VNS NS . . . Azides (N3 group compounds)
VNS O . Nitroso compounds
VNS OQ . . Nitro compounds (NO2)
VR . . . Amides
VRJ C . . . . Acetamide, ethanamide
CPO Q Sulphur acyclic compounds
QMX JB . Methyl mercaptan
T Halogen acyclic compounds
TJA . Haloalkanes, alkohalides
V . Chlorine acyclic compounds
VJB . . Chloromethane, methyl chloride
VMF . . Carbonyls
VMF C . . . Ethanoyl chloride, acetyl chloride
CPP NQ Lead acyclic compounds
NQK C . Ethylene
NQK CHP . . Tetraethyl lead, TEL

Chemistry C
Chemical species CG
Organic chemistry CO
Acyclic compounds CP
. . . . . Tetraethyl lead CPP NQK CHP

CPR Alicyclic compounds
* Having both aliphatic (acyclic) and cyclic characteristics.
* As cyclics, lack aromatic ring; see CR/CS.
* General works only go here. Most of the literature refers to cyclic compounds (non-aromatic); see CQX.

CQ Cyclic compounds (organic), ring compounds (organic)
* For alicyclic compounds, see CPR.
* Add to CQ letters A/I following CO; eg

CQA G . Bonding
O . Molecular structure
OW . . Ring structure
P . . Stereochemistry
Y . Reactions
CQD G . . Ring strain
* See also Conformation CGH GCR R.
GH . . Ring opening
GJ . . Ring closure
CQG . Functional groups in cyclic compounds
CQH Y . Acids, bases & salts
CQI A . . Acids
E . . Salts
. *Kinds of cyclic compounds by constituents carbon, hydrogen & oxygen*
* For cyclic compounds with heterocycles, see CS. But note that Benzene (CR) is an exception to this and includes its heteroatoms.
* Add to CQ letters IX/MP following CO; eg,
X . . Homocyclic compounds, carbocyclic compounds, isocyclic compounds, hydrocarbons (homocyclic)
* Cyclic compounds in which all the atoms in the basic ring are the same (carbons and hydrogens only).
* Nearly all the literature relates either to alicyclic (non-aromatic) or aromatic compounds. Use this location only for works dealing primarily with the common features of both those classes.
* Compounds which display alicyclic characteristics in some of their members and aromatic in others are located under alicyclics (CPR); eg Annulenes CRK RGK area, located under cycloalkenes.
* For compounds in which an atom or atoms other than C or H replace a carbon in the basic ring, see CS Heterocycles. But an exception is made in the case of Benzene (CR) which includes its heteroatoms.

CQJ A . . . Cycloalkanes, cycloparaffins
D . . . . Cyclopropyl group
F . . . . Cyclopentane
G . . . . Cyclohexyl group
I . . . . Cyclooctane, octomethylene
K . . . . Cyclodecane

Cyclic compounds

Chemical species CG
Organic chemistry CO
Cyclic compounds CQ
Kinds of cyclic compounds by constituents carbon, hydrogen & oxygen
. . Cycloalkanes CQJ A
. . . Cyclodecane CQJ K

CQK A . . Cycloalkenes, cyclofurene, tetrahydrobenzene
* For Annulene (which includes both aromatic and Non-aromatic cyclic compounds) see CQK PGK U.

C . . . Cyclopolyenes

PGK U . . . . Annulenes
* Include aromatic as well as non-aromatic species.
* For specific annulenes, see under the number of their carbons within the basic classes aromatics, etc.
* For [6]annulene, see benzene CRK RGK;
* For [18]annulene, see CQW MKP GKU.

Q . . . . Dienes
* For metallocenes (cyclopentadienylides), see under non-benzenoid aromatics CSM TMQ OKK Q.

CQL A . . Cycloalkynes

R . . With oxygen

T . . . Cycloalcohols

TJG . . . . Cyclohexanol, hexahydrophenol, hexalin

TJG JB . . . . . Methylcyclohexanol, methylhexalin, hexahydrocresol

CQM E . . . Ethers
* For epoxides, see CSS QAO D Heterocycles - Three-member rings.

K . . . Ketones
* For cyclohexadienedione (quinone), see CRM KSR

KJG . . . . Cyclohexanone, ketohexamethylene, pimelic ketones
* See also Terpenes CTO

M . . . Carboxylic acids

P . . . Esters

PN . . . . Lactones

Cyclic compounds with heteroatoms
* See CS Heterocycles.

Cyclic compounds by basic structure

. *Cyclic compounds by ring structure*

CQP Y . . Ring structures in cyclic compounds

. . *Cyclic compounds by number of rings in molecule*
* Some cyclic compounds may include elements of straight chain structure. These are disregarded in this classification by number of rings.
* For Alicyclic compounds, see CQX.

CQQ A . . . Monocyclic compounds, mononuclear ring systems
* These are usually assumed if a polycyclic is not stated. Do not include this classmark in those of specific compounds or classes of compounds.

Chemistry C
Chemical species CG
Organic chemistry CO
Cyclic compounds CQ
Monocyclic compounds CQQ A

CQQ B Polycyclic compounds, polynuclear ring systems
* The term polycycles is sometimes used to mean heterocycles; but see CS for these.
* For compounds with a specific number of rings, see CQQ E/J.

C . Linkage mode in polycyclic compounds

CR . . Rings linked by separate bonds

CS . . Rings linked by functional groups
* If there is more than one functional group link, cite the groups retroactively.
* Add to CQQ CS letters J/P following CO; eg

CSJ A . . . With alkyls

CSR . . Directly linked polycyclic compounds

CSS . . Indirectly linked polycyclic compounds

CT . . Condensed cyclic systems, fused ring systems
* Two rings have one or more atoms in common.
* For naphthalene, see CRQ EN.

CU . . . Spiro compounds
* Two rings having one atom in common.

CUV . . . . Monospiro compounds
* Two rings linked by a common atom

CUX . . . . Polyspiro compounds
* Multiple rings linked by a common atom.

CV . . . Bridged systems
* Shared carbons are non-adjacent.

CVO V . . . . Non-benzenoid compounds

CVO VGX . . . . Cyclophanes
* With branches bridged across benzene rings.

CVR . . . Cryptands
* Usually heterocycles, in which case see CSQ CVR.

CVT . . . Cryptates

By specific number of rings

E . Bicyclic compounds, dicyclic compounds, binuclear cyclic compounds

ES . . Bicyclic spiro compounds, spiranes
* Two rings having one atom in common.

ESJ F . . . Spiropentane

F . Tricyclic compounds, trinuclear cyclic systems

G . Tetracyclic compounds

H . Pentacyclic compounds

I . Hexacyclic compounds

J . Seven or more rings
* Add to CQQ letter KA for 8 rings, KB for 9 rings and so on; eg, CQQ KK for 18 rings.

Cyclic compounds

Chemistry C
Chemical species CG
Organic chemistry CO
Cyclic compounds CQ
Cyclic compounds by ring structure
. . . Seven or more rings CQQ J

Compounds by number of members in ring, ring size

CQQ S . Rings all the same size
* Usually assumed, unless otherwise stated. If not so stated, do not use this classmark or position for specific compounds, only for general works.

X . Mixed ring-size polycyclic compounds
* For polycyclic compounds whose rings vary in size the larger sized ring is cited before the smaller. To the classmark for this larger ring, add the letter following CQ for the smaller ring-size; eg, CQT QXS (for 4-membered ring - Polycyclic - With mixed-sized rings - With 3-member rings also.
* The larger the first-cited ring, the more sizes of smaller rings may be needed to qualify it; eg, a 4-membered polycyclic may be qualified by inclusion of a 3-membered ring also, but a 5-membered ring may be qualified by inclusion of a 3-membered &/or 4-membered ring. This is allowed for in the notation.

CQS . Three-membered rings

CQT . Four-membered rings
* Add to CQT letters A/Q following CQ;

QX . . Polycyclic - With mixed size rings

QXS . . . With 3-membered rings also

CQU . Five-membered rings
* Add to CQU letters A/Q following CQ;

QX . . Polycyclic - With mixed size rings

QXS . . . With 3-membered rings also

QXT . . . With 4-membered rings also

CQV . Six-membered rings (other than benzene)
* General works only.
* See also (Special bonding structures) CQN.. (many of which involve 6-membered rings).
* For benzenoids and benzene, see CQY V and CR.
* Add to CQV letters A/Q following CQ;

CQW A . Seven-membered rings
* Notes under CQQ S apply here also.
* Add to CQW A letters Q/R following CQ for compounds containing 7-membered rings only;
* For 7-membered rings containing other rings also, Add to CQW A letters RSS/RSW following CR.

. More than 7 members
* Use CQW B for 8-membered rings, CQW C for 9-membered rings, and so on; eg,

B . . Eight-membered rings

M . . Eighteen-membered rings

MKP GKU . . . [18]Annulene

Chemistry C
Chemical species CG
Organic chemistry CO
Cyclic compounds CQ
Cyclic compounds by basic structure
. . . . [18]Annulene CQW MKP GKU

Cyclic compounds by special bond structures

CQX . Alicyclic compounds, non-aromatic HC compounds
* Carbocyclic compounds with aliphatic characteristics (ie, lacking an aromatic ring). eg,Adamantane (CO10H10)
* General works only; for compounds with specific HC constituents, see CQI X/CQM P.
* For aliphatic compounds in general, see Chain organic compounds CP.

P . Pseudo-aromatic compounds
* With conjugated rings, but not obeying Huckel's rule, so not aromatic.
* Add to CQX P letters A/P following CQ; eg, CQX PJA Cycloalkanes.

PKA . . Cycloalkenes, cycloolefines

PKA T . . . Cyclooctatetraene, COT (cyclooctatetraene)

CQY . . . Aromatic compounds
* A class of cyclic polyenes (cyclics containing more than one double bond) with a unique type of resonant conjugation (having double bonds separated by just one single bond) known as aromaticity.
* Most of the literature relates to benzene and its derivatives (see CR). Qualify this general class only when the work relates clearly to aromatic compounds in general, not just to benzene specifically.
* For fullerenes, see carbon allotropes CGF LMG JQU.
* For Benzenoid and Benzene compounds, see CQY V/CR.

AKM . . . . Aromatic bonds

AY . . . . Reactions

CPB CC . . . . . Friedel-Crafts reaction

KA . . . . Arenes, aromatic hydrocarbonss

LA . . . . Aromatic arynes
* Transients; sometimes treated as functional groups.

S . . . . Non-benzenoid compounds

V . . . . Benzenoid compounds
* Qualify this general class only if the work clearly distinguishes it from benzenes (CR).
* See also polycyclic aromatic hydrocarbons (PAHs) CRQ B.

Benzene compounds

Chemistry C
Chemical species CG
Organic chemistry CO
Cyclic compounds CQ
Pseudo-aromatic compounds CQX P
Benzenoid compounds CQY V

CR Benzene compounds, monocyclic benzenes
* Note that although Polycyclic benzenes are separately filed (at CRQB/CRR) monocyclic benzenes (CRQ A) are not distinguished from benzene compounds in compounds in general at CR/CRP.
* For aromatic compounds in general, see CQY; if in doubt, class here.
* Add to CR letters A/MP following CQ; eg,

. *Reactions*
CRC WM . . Monosubstitution
WN . . Polysubstitution

. *Kinds of benzene compounds by constituent elements*
* For benzene compounds defined by basic structure eg, ring size) see CRQ

CRI X . . With hydrocarbons
CRJ A . . . Alkanes
B . . . . Methane
BP . . . . . Toluene, methyl benzene, phenolmethane
* For phenylmethyl group, see benzyl group CRL O.
BR . . . . . Xylene, dimethylbenzene
BS . . . . . Mesitylene, trimethylbenzene
BT . . . . . Tetramethylbenzene, durol
BU . . . . . Pentamethylbenzene
BV . . . . . Hexamethylbenzene
C . . . . Ethyl benzene
D . . . . Propyl benzene, phenylpropane
DGR . . . . . Isopropyl benzene, cumene
DJB . . . . . Cymenes, isopropylmethylbenzenes
CRK A . . . Alkenes
C . . . . Styrene, ethenyl benzene, vinylbenzene, phenylethylene
QG . . . . Hexadiene, dihydrobenzene
RGK . . . . Benzene, [6]Annulene
CRL A . . . Alkynes
O . . . Benzyl, phenylmethyl
* The group C6H5CH2 -.
OX . . . . Benzyne

Organic chemistry CO
Cyclic compounds CQ
Pseudo-aromatic compounds CQX P
Benzene compounds CR
With hydrocarbons CRI X
. . Benzyne CRL OX

CRL R Oxygen-containing hydrocarbons
RJA . Alkoxy
. . Alcoholates, alkoxides
S . . Hydroxy
* When attached directly to a C (in the benzene nucleus) this produces a phenol (a weak acid). When attached to a sidechain (notably the benzyl radical -CH2), it produces an alcohol.
T . . . Alcohols
TLO . . . . Benzyl alcohol, phenylmethanol, hydroxytoluene
* For cresol, see monohydric phenols CRL UJC.
. . . . Methyl
TLO JB . . . . . Methylbenzyl alcohol, methylphenylcarbinol, phenylmethyl carbinol, sec-phenethyl alcohol, styralyl alcohol
. . . . Ethyl
TLO JC . . . . . Phenylethyl alcohol, phenethyl alcohol, benzyl carbinol, phenylethanol
. . . . Propenyl
TLO KD . . . . . Cinnamic alcohol, phenylallylic alcohol, phenylpropenol, styryl carbinol, phenylpropyl alcohol, cinnamyl alcohol
TX . . Phenol, carbolic acid, phenylic acid, hydroxybenzene
* For benzyl alcohol, see CRL TLO.
U . . . Monohydric phenols
UJC . . . . Cresol, methylphenols, hydroxytoluenes
ULR JB . . . . Guaiacol, 2-methoxyphenol, hydroxyanisole, hydroxymethoxybenzene, methylpyrocatechin, guaic alcohol
V . . . Polyhydric phenols
W . . . . Dihydric phenols, dihydroxy benzenes
WGR . . . . . Isomers
WGR Q . . . . . Catechol, 1,2-dihydroxybenzene, pyrocatechol, catechin
WGR R . . . . . Resorcinol, 1,3-dihydroxybenzene, resorcin
WGR S . . . . . Hydroquinone, 1,4-dihydroxybenzene, hydrochinone, hydroquinol, quinol
. . . . . Methyl
WJB . . . . . Orcinol, dihydroxytoluene, orcin

Benzene compounds

Cyclic compounds CQ
Pseudo-aromatic compounds CQX P
Benzene compounds CR
Alkoxy CRL RJA
. . . Dihydric phenols CRL W
. . . . . Orcinol CRL WJB

CRL X . . . Trihydric phenols, trihydroxybenzenes
* For quinones, see CRM KSR.
XGR . . . . Isomers
XGR Q . . . . . Pyrogallol, 1,2,3-trihydroxybenzene, pyrogallic acid
XGR R . . . . . Phloroglucinol, 1,3,5-trihydroxybenzene, phloroglucine
YB . . . Tetrahydric phenols

CRM C Peroxides
* For benzoyl peroxide, see under diphenyls at CRQ EMC R.
Ethers
E . Phenyl ethers, alkoxyarenes
EJB . . Anisole, methoxybenzene, methylphenyl ether
EKD . . Anethole, p-propenyl anisole, 1-methoxy-4-propenylbenzene, anise camphor
* See also Essential oils (anise, etc.) CTK VW
EKD KB . . Safrole, 3,4-methylenedioxyallyl benzene
ELR KDJ B . . Eugenol, 4-allyl-2-methoxyphenol
F Carbonyl compounds
FLN . Benzoyl group
Aldehydes
H . Benzaldehyde, benzenecarbaldehyde
HKD . Cinnamic aldehyde, cinnamyl aldehyde, 3-phenylpropenal
HLR JB . Anisaldehyde, para-methoxybenzaldhyde
* For piperonal (piperonyl aldehyde), see CRQ EMH R.
HLS . Hydroxyaldehydes
HLS LRJ A . . Salicylaldehyde, helicin, ortho-hydroxybenzaldehyde, salicylal, salicylic aldehyde
HLS LRJ B . . Vanillin, 4-hydroxy-3-methoxybenzaldehyde, 3-methoxy-4-hydroxybenzene carbaldehyde, vanillic aldehyde
K Ketones
. Methyl
KJB . . Acetophenone, phenyl methyl ketone
KS . Diketones
KSR . . Quinone, benzoquinone, chinone, cyclohexadienedione

Organic chemistry CO
Cyclic compounds CQ
Pseudo-aromatic compounds CQX P
Benzene compounds CR
Ketones CRM K
. . Quinone CRM KSR

CRM M Carboxylic acids
* Retroactive notation is amended slightly here to accommodate the enumeration of specific acids.
* Add to CRM MIA letters A/MM following CR if applicable.
MIB . Monocarboxylic acids
MIB N . . Benzoic acid, benzenecarboxylic acid
MIB P . . Phenylethanoic acid, phenylacetic acid, toluic acid
MIB Q . . Phenylpropionic acid, hydrocinnamic acid
MIB R . . Cinnamic acid, 3-phenylpropenoic acid, benzalacetic acid, beta-phenylacrylic acid, styrylformic acid
MIB S . . Coumaric acid, trans-2-hydroxycinnamic acid
MIC . Polycarboxylic acids
MID . . Dicarboxylic acids
MID P . . . Phthalic acids
MID PGR . . . . Isomers
MID PGR Q . . . . . Benzeneorthodicarboxylic acid, phthalic acid
MID PGR R . . . . . Isophthalic acid (meta form)
MID PGR S . . . . . Terephthalic acid (para form)
MIE . . Tricarboxylic acids
MIE N . . . Benzene tricarboxylic acid, hemimellitic acid
MIF . . Tetracarboxylic acids
MIF P . . . Pyromellitic acid, PMA, benzenetetracarboxylic acid
MIG . . Pentacarboxylic acids
MIH . . Hexacarboxylic acids
MIH P . . . Mellitic acid, benzenehexacarboxylic acid
MKG S . Shikimic acid, trihydroxycyclohexene carboxylic acid
MLS . With hydroxy group
. . With benzyl
MLS LO . . . Phenol alcohol acids
MLS LOQ . . . . Mandelic acid, amygdalic acid, benzoglycolic acid, phenylglycolic acid, phenylhydroxyacetic acid
. . *By number of hydroxyls*
. . . Monohydroxy acids
MLS R . . . . Salicylic acid, 2-hydroxybenzoic acid
MLS S . . . Polyhydroxy acids
MLS U . . . . Gallic acid, 3,4,5-trihydroxybenzoic acid
MMH . With aldehydes

Nitrogen with benzene & particular elements

Organic chemistry CO
Cyclic compounds CQ
Pseudo-aromatic compounds CQX P
Benzene compounds CR
Oxygen-containing hydrocarbons CRL R
. . With aldehydes CRM MMH

CRM MO . . Acid anhydrides
* For coumarin (C9H6O2), see under heterocycles CSV QEO MQP R.
P . . With esters

R Benzene compounds with heteroatoms (non-HC)
* An exception is made here to the general rule whereby all organic cyclic compounds with (non-HC) heteroatoms go in CS Heterocycles. However, an alternative (not recomended) is provided there for libraries wishing to keep all heterocycles together.
* Add to CR letters MR/P following CO; eg, CRN S Nitrogen with benzene.
RX . Benzene compounds with mixed heteroatoms
* General works only go here; for specific mixed heteroatoms, add the separate heteroatoms retroactively as follows:
* Add the letter X to the end of the classmark of the first cited element, followed by the classmark for the second one; eg, Heterocycles with mixed nitrogen and metals CRN VXM T (note that nitrogen has a classmark, exceptionally, stretching over several letters (CON S/CON V) - so X is added to the last letter CON V).
S . Benzene compounds with elements of a given period
T . Organometals with benzene
CRN N . Silicon with benzene
S . Nitrogen with benzene, pyridine
. . With hydrocarbons & oxgen
SLS . . . Hydroxy compounds
SMF . . . Carbonyl compounds
SMK . . . . Ketones
SMM . . . . Carboxylic acids
* For amino acids, see CUD.
SMO . . . . Acid anhydrides
. . Nitrogen with benzene & other elements in general
SNV NS . . . Diazo compounds
SNV NSO R . . . . Azo compounds
* For azoles, see CSU QAN SMQ SB.
SNV NSO RT . . . . . Benzotriazole, benzeneazimide, azimidobenzene

Cyclic compounds CQ
Benzene compounds CR
Benzene compounds with heteroatoms CRM R
Nitrogen with benzene CRN S
Nitrogen with benzene & other elements in general
. . . Benzotriazole CRN SNV NSO RT

Nitrogen with benzene & particular elements
. Nitrogen with hydrogen
CRN T . . Amines
. . . Ethyls
TJC . . . . Phenylethylamine
. . . Phenol
TLT . . . . Aminophenols, 4-aminophenol, rodinol, 4-hydroxyamine
TLT ME . . . . . Ethers
TLT MEJ C . . . . . Phenetidine, aminophenetole, 4-ethoxyaniline
. . . Primary amines
TR . . . . Aniline, phenylamine, aminobenzene, benzeneamide
TRJ A . . . . Alkylanilines
TRJ B . . . . . Toluidine, aminotoluene
TRJ BR . . . . . Xylidine, aminodimethylbenzene, aminoxylene
. . . . Carboxy acids
U . . . . . Amino acids
* See CUD; eg phenylalanine CUE J.
UV . . . . Primary amines with other functional groups
. . . . . Hydrazines
UVQ . . . . . Phenylhydrazine, hydrazinobenzene
UVQ S . . . . . Phenylhydrazones
UVS . . . . . Diamines
UVT . . . . . Phenylenediamine, diaminobenzene
. . . Secondary amines
UW . . . . Imino compounds, imines
UWM M . . . . . Carboxylic acids
. . . . . Methyl
UWM MJB . . . . . Phenylglycine, anilinoacetic acid
VNM . Nitrogen with carbon
. . Isocyano compounds
VNM C . . . Phenylisocyanate, isocyanatobenzene
. . Nitriles
VNM IF . . . Benzonitrile, benzene carbonitrile, phenyl cyanide
. Nitrogen with oxygen
. . Nitroso compounds
VQ . . . Nitrosophenol
VQL S . . . Cupferron, nitrosophenylhydroxylamine, ammonium nitrosophenylhydrazine, ammonium nitrosophenylhydroxylamine

Benzene compounds

Cyclic compounds CQ
Benzene compounds with heteroatoms CRM R
Nitrogen with benzene CRN S
. Nitrogen with benzene & particular elements
. . . Nitroso compounds
. . . . Cupferron CRN VQL S

. . . Nitro compounds
CRN VQP . . . . Nitrobenzene, oil of mirbane
VQP JB . . . . Nitrotoluene, methylnitrobenzene
. . . . Hydroxy compounds
VQP LS . . . . . Picric acid, trinitrophenol, carbazotic acid, nitroxanthic acid, picronitric acid
. . . . Ethers
VQP ME . . . . . Phenylnitroethers
. . . . Amides, amido compounds
VR . . . . . Benzamide
VS . . . . Imido compounds, imides
VX . Mixed heteroatoms with nitrogen
VXM T . . Metal with nitrogen heteroatoms
W Phosphorus with benzene
WO . With oxygen
WOI A . . Acids
WOI BN . . . Benzene phosphonic acid, phenylphosphonic acid
CRO Q Sulphur with benzene
QIA . Aryl sulphonic acids
QIB X . . Benzenesulphonic acid, phenolsulphonic acid, sulphocarbolic acid
QIB XQ . . Benzenedisulphonic acid
QIB XR . . Benzenesulphonates
. Aldehydes
. Esters
. With other elements
. . Sulphur with hydrogen
QMX . . . Thiols, mercaptans
QMX LO . . . . Benzyl mercaptan
QNS . . Sulphur with nitrogen
QNT . . . Amines
QNT IBN . . . . Sulphanilic acid, aminobenzenesulphonic acid, anilinesulphonic acid
QNU VQ . . . Hydrazines
QNU VQI B . . . . Phenylhydrazinesulphonic acid
. . . Amides
. . . . Sulphonamides
QNV R . . . . . Sulphanilamide, aminobenzenesulphonamide
T Halogen with benzene
UU . Benzylfluoride
V . Chlorobenzene, chlorobenzol, monochlorobenzene, phenyl chloride
VLO Benzyl chloride
VLO P . Benzalchloride, benzylidene chloride, chlorobenzal, dichlorotoluene
VLO Q . Benzotrichloride, trichlorotoluene

Cyclic compounds CQ
Pseudo-aromatic compounds CQX P
Benzene compounds CR
Kinds of benzene compounds by constituent elements
. . Benzyl chloride CRO VLO
. . . Benzotrichloride CRO VLO Q

CRO VMM . . . Chlorobenzoic acid
CRP X . . Mercury with benzene
XMP . . . Esters
XMP JC . . . . Phenylmercuric acetate, phenylmercuric ethanoate

Benzene compounds by number of rings in the molecule

CRQ A . Monocyclic benzenes
* Usually assumed unless otherwise noted. Prefer the general class above (CRD/CRP).
B . Polycyclic benzenes, polyaromatic hydrocarbons, PAHs
* The term PAH is often used in reference to condensed polycyclic benzenes in particular.
* Add to CRQ C letters A/P following CR above.
C . . Linkage modes between rings
E . . Bicyclic benzene, diphenyls, biphenyls, phenylbenzene
EJB . . . Methane
EJB R . . . . Diphenyl methane, benzylbenzene
EKC . . . Ethylene
EKC R . . . . Diphenylethylene, stilbene, toluylene
EKC S . . . . Fluorene, diphenylenemethane, benzindene
EKC T . . . . Diphenyl butene
ELA . . . Alkynes
ELA R . . . . Terphenyl, diphenylbenzene
EMC . . . Peroxides
EMC R . . . . Benzoyl peroxide, dibenzyl peroxide
EME . . . Ethers
EME R . . . . Benzyl ether, dibenzyl ether
EMH . . . Aldehydes
EMH R . . . . Piperonal, heliotropin, 3,4-methylenedioxybenzaldehyde, piperonyl aldehyde, methyleneprotocatechnic aldehyde
EMK . . . Ketones
EMK Q . . . . Ionone, irisone
EMK R . . . . Benzophenone, diphenyl ketone, phenyl ketone
EMK S . . . . Benzil, diphenylethanedione, dibenzoyl, diphenylglyoxal
EMK T . . . . Diphenylcyclopropenone
EMM . . . Carboxylic acids
EMM KG . . . . Hydroxycyclohexenecarboxylic acid
EMM R . . . . Diphenyldicarboxylic acid, diphenic acid
EMP . . . Esters
EMP R . . . . Benzyl benzoate
EN . . . Naphthalene
ENL T . . . . With hydroxyls
ENL TR . . . . . Naphthol

Benzene compounds

Cyclic compounds CQ
Benzene compounds by number of rings in the molecule
. . Bicyclic benzene CRQ E
. . . Naphthalene CRQ EN
. . . . With hydroxyls CRQ ENL T
. . . . . Naphthol CRQ ENL TR

CRQ ENM M . . . . With carboxylic acids
ENM MR . . . . . Naphthenic acids
ENS . . . Nitrogen compounds
. . . . Azo compounds
ENS MT . . . . . Azobenzene, azobenzol, benzeneazobenzene, diphenyldiazene
. . . . With amines
ENT . . . . . Naphthylamine
ENU . . . . . Diphenylamine, phenylaniline, diaminophenyl
ENV . . . . . Diazoamino benzene, benzeneazoanilide, diazobenzeneanilide, diphenyltriazine
ENW . . . . . Azoxybenzene
EOQ . . . Sulphur compounds
. . . . With nitrogen
EOQ NS . . . . . Sulphadiazine, aminobenzenesulphonamido pyrimidine
EOQ XS . . . . Naphthalene sulphonic acids, Armstrong's acid
F . . Tricyclic benzene, triphenyl benzenes
FJA . . . Triphenyl methyl
FJB . . . . Triphenyl methane
FKD . . . Triphenyl cyclopropenyl
FLT JB . . . Triphenyl methanol
FQ . . . Anthracene
. . . . With ketones
FQM K . . . . . Anthraquinone, dihydrodiketonanthracene
FQM KLS . . . . . Alizarin, dihydroxyanthraquinone
FQM KLT . . . . . Anthrahydroquinone, oxanthrol
FR . . . Phenanthrene
FSB . . . Retene, methylisopropylphenanthrene
G . . Tetracyclic benzene, tetraphenyl benzenes
GNP . . . Tetraphenyltin, tin tetraphenyl
GQ . . . Naphthacene, tetracene
GR . . . Chrysene, benzophenanthrene
GSB . . . Fluoranthene
H . . Pentacyclic benzene
J . . Seven or more rings
Benzene compounds by size of ring, number of members
QX . Mixed sized rings in polycyclic benzenes
* Benzene almost always implies a 6-membered ring. But in some cases, polycyclic benzenes will contain one or more rings of a different size.

CRR SS . . With 3-membered rings also

Chemistry C
Chemical species CG
Organic chemistry CO
Cyclic compounds CQ
Cyclic compounds by special bond structures
. . . . . With 3-membered rings also CRR SS

CRR ST . . . . . With 4-membered rings also
SU . . . . . With 5-membered rings also
SUQ E . . . . . Bicyclic benzenes with one ring of 5-members
SUQ EI . . . . . Indene, cyclopentadiene
SUQ F . . . . . Tricyclic benzenes with one 5-member ring
SUQ FB . . . . . Acenaphthene
SUQ FD . . . . . Acenaphthylene
SUQ FF . . . . . Acenaphthenequinone
SV . . . . . With 6-membered rings also
. . . . . With 7 or more membered rings also
* Add letters as indicated at CSQ SW below.

CS Heterocyclic compounds, heterocycles
* Organic ring compounds which combine C or CH with other kinds of elements (heteroatoms) such as N or S; eg, Furan (C4H4O) at CSU QAO B; pyridine (C5H5N) at CSV QFN SE.
* Add to CS letters A/I following CQ; eg,
. Preparative chemistry
CS8 OQ . . Scavengers
. Reactions
CSC FJA . . Alkylation
HE . . Nucleophilic substitution
* Usually implies aromatic compounds (see CSV).
. *Kinds of heterocycles by constituent atoms*
. . *With CHs and O only as constituents*
* These are included here, with the heteratoms, because (1) They are logically part of the constituents array; (2) They frequently qualify the heteroatoms compounds themselves.
* Add to CS letters IX/MP following CO; eg,
. . . Hydrocarbons
CSI X . . . . Homocyclic compounds (heterocycles)
* Consisting of hydrocarbons only. Most of the literature on them relates to benzene at CR (which is an exception to the general rule whereby heterocycles of a compound file separately at CS.
* See definition of homocyclics at CQM R. Use this position only for consideration of saturation and and aromaticity in heterocycles. Most of the literature on this relates to benzene heterocycles (which are an exception to the rule of filing heterocycles separately at CS, by filng them with benzene at CR). It is included here in case it is needed under other kinds of heterocycles.
CSJ A . . . . . Alkanes

Heterocyclic compounds

Organic chemistry CO
Cyclic compounds CQ
Heterocyclic compounds CS
With CHs and O only as constituents
. . Homocyclic compounds CSI X
. . . Alkanes CSJ A

CSL R . . Hydrocarbons with oxygen
CSM E . . . Ethers
EQ . . . . Crown ethers
* Macrocyclic polyethers with repeating (O-CH2.CH2) in units; eg 18-crown-6 ether (where 18 is the number of members in the ring and 6 the number of O heteroatoms..
* For particular crown ethers, see under the number of members in the ring.
* See also Cryptates CSQ CVT.
P . . . Esters
Kinds of heterocycles by heteroatoms replacing hydrogen or carbon
. *Kinds by number of same heteroatoms*
* General works only on these; nearly all the literature deals with these classes under a given size heterocycle (at CSS/CSW) or a given species of heteroatom (at CSM T/CSP).
QM . . Monoheteroatom heterocycles
QP . . Polyheteroatom heterocycles, multiheteroatom compounds
. . *Polyheteroatom compounds by specific number*
* All are assumed to be the same kind if not qualified by -QQ Mixed.
* General works only; do not add to classmark of element(s).
QPR . . . Two heteroatom heterocycles
QPS . . . Three heteroatom heterocycles
QPT . . . Four heteroatom heterocycles
QPU . . . Five or more heteroatom heterocycles
QQ . Mixed heteroatoms in a heterocycle
* When there are two or more different heteroatoms, build the classmark retroactively, using the letters MT/P following CS below: eg, nitrogen & sulphur heteroatoms CSO QNS (where CSN S is nitrogen and CSO Q is sulphur).
. *Kinds of heterocycles by specific heteroatoms replacing C or H*
* Add to CS letter MRQ/PY following CO; eg,
RR . . Heterocycles with elements of a particular period
T . . Metallic heterocycles
. . . Dienes
TMQ OKK Q . . . . Metallocenes

Organic chemistry CO
Cyclic compounds CQ
Heterocyclic compounds CS
Kinds of heterocycles by constituent atoms
. . . Metallic heterocycles CSM T
. . . . . Metallocenes CSM TMQ OKK Q

CSN S . . . Nitrogen heterocycles
* For alkaloids, see CUA.
* General works only. Specific heteratoms are subordinated to the basic structures below.
* Add to CS letters NS/NV following CO in CON S/V.
CSO . . . Oxygen heterocycles
Q . . . Sulphur heterocycles
Kinds of heterocycles by basic structure, ring structure
Kinds of heterocycles by number of rings in molecule
CSQ A . Monocyclic heterocycles
* Usually assumed.
B . Polycyclic heterocycles
C . . Linkage modes in polycyclic heterocycles
CR . . . Separately linked, linked by separate bonds
CT . . . Condensed, fused
CVR . . . . Cryptands
CVT . . . . Cryptates
E . . Bicyclic heterocycles
F . . Tricyclic heterocycles
G . . Tetracyclic heterocycles
H . . Pentacyclic heterocycles
I . . Hexacyclic heterocycles
J . . Seven or more heterocycles in molecule

Heterocycles by number of members in ring, ring-size
S . Mixed sizes in polycyclic heterocycles
* In these cases, the largest ring is usually cited first. But if a smaller ring contains the heteroatom whilst the larger ring has none, cite the smaller ring first; eg, in the bicyclic Indole (C8H7N) the 5-member ring contains the heteroatom and the six-member ring has none; it is therefore classed as a 5-member ring (at CSU QEN ST).
SS . . Three-member heterocycles (in mixed-size heterocycles)
ST . . Four-member heterocycles (in mixed-size heterocycles)
SU . . Five-member heterocycles (in mixed-size heterocycless)
SV . . Six-member heterocycles (in mixed-size heterocycles)
SWA . . Seven-member heterocycles (in mixed-size heterocycles)
SWB . . Eight-member heterocycles (in mixed-size heterocycles)
* For 8- and more member heterocycles add letters B, C etc. to CSQ SW; eg, CSQ SWD Ten-member.

Chemical species CG
Organic chemistry CO
Cyclic compounds CQ
Heterocyclic compounds CS
Mixed sizes in polycyclic heterocycles CSQ S
. Eight-member heterocycles CSQ SWB

CSS Three-member heterocycles
QA . Monocyclic
QAN S . . Nitrogen
QAN UW . . . Imines, secondary amines
QAN UXE . . . Aziridine, dihydroazirine, ethylene imine, azacyclopropane
QAO . . Oxygen heterocycles
QAO O . . . Epoxy compounds, epoxides, cyclic ethers
QAO P . . . Oxirane, ethylene oxide, epoxyethane, oxacyclopropane
QAO Q . . Sulphur
QAO R . . . Thirane, thiirane, ethylene sulphide, thiacyclopropane
QAO U . . Fluorine
QAO UO . . . Fluorine with sulphur
QAO UOQ . . . . Fluorothiirane, fluorothiacyclopropane

CST Four-member heterocycles
QA . Monocyclic
QAN S . . Nitrogen heterocycles (4-member rings)
QAN SA . . . Azetidine
QAN SB . . . Azetidine carboxylic acid
QAO . . Oxygen heterocycles (4-member rings)
QAO N . . . Oxetane
QAO NW . . . Oxygen with phosphorus
QAO Q . . Sulphur heterocycles (4-member rings)

CSU Five-member heterocycles
QA . Monocyclic
QAN S . . Nitrogen heterocycles (5-member rings)
QAN SA . . . Pyrrolidine, tetrahydropyrrole, azacyclopentane
QAN SB . . . Pyrrole
QAN SMQ S . . . Two nitrogens
QAN SMQ SA . . . . Pyrazole, 1,2-diazole
QAN SMQ SB . . . . Azoles
QAN SMQ SC . . . . Imidazole, iminazole, glyoxaline, 1,3-diazole
QAN SMQ T . . . Three nitrogens
QAN SMQ TA . . . . Triazole
QAO . . Oxygen heterocycles (5-member rings)
QAO B . . . Furan, furfuran
QAO C . . . Tetrahydrofuran, THF, tetramethylene oxide
QAO NS . . . Oxygen with nitrogen
QAO NSA . . . . Oxazole, phenoxazine
QAO Q . . Sulphur heterocycles (5-member rings)
QAO QN . . . Thiophen, thiophene, thienyl ring, thiofuran
QAO QNS . . . Sulphur with nitrogen
QAO QNS A . . . . Thiazole, isothiazole

Cyclic compounds CQ
Heterocyclic compounds CS
Five-member heterocycles CSU
. Monocyclic CSU QA
. . Sulphur heterocycles CSU QAO Q
. . . . Thiazole CSU QAO QNS A

CSU QAP O . . Iron heterocycles (5 member rings)
QAP OA . . . Ferrocene, cyclopentadienyl iron
QE . Bicyclic 5-member rings
QEN S . . Nitrogen
QEN ST . . . Indole (C8H7N)
QF . Tricyclic 5-member rings
QFN S . . Nitrogen
QFN SA . . . Carbazoyle (C12H7N)
QFN SAA . . . . Acridine ?
QFO Q . . Sulphur
QFO QNS . . . Sulphur with nitrogen
QG . Tetracyclic 5-member rings
QGN S . . Nitrogen
QGN SMQ U . . . Porphin, porphine
* For porphyrins (pigments) (C34H34N4O4) (of which porphin is the parent structure), see CWF M.

CSV Six-member heterocycles
* For heterocycles of benzene, see CR.
NS . Nitrogen heteroatoms (6-member rings)
O . Oxygen heteroatoms (6-member rings)
ONS . Oxygen wwith nitrogen
* See also Nucleotides CVG XC
QA . Monocyclic 6-member rings
QAV O . . Oxygen
QAV OA . . . Dioxane, dioxan, diethylene dioxide, glycol ethylene ether
QAV OQA . . . Two oxygen heteroatoms
QAV OQA A . . . . Pyrone
QAV OQB . . . Four oxygen heteroatoms
QAV OQB A . . . . Lactides
QE . Bicyclic 6-member rings
QEN S . . Nitrogen
* For nicotine, see CUA SVR NSR LRE S (under alkaloids).
QEN SA . . . Quinoline
QEN SB . . . Isoquinoline
. . . Amines
* For guanine, see CSW VON S.
QEN SC . . . . Adenine, 6-aminopurine
* For adenine as a purine nucleotide, see CVG YF.
QEN SMQ PTA . . . *With 4 nitrogen atoms*
QEN SMQ PTA A . . . . Purine
QEO . . Oxygen
. . . *By number of heteroatoms*
QEO MQM . . . . Chroman (with 1 oxygen atom)
QEO MQP R . . . . Benzopyrone, coumarin (with 2 oxygen atoms)

Six-member heterocycles

Organic chemistry CO
Cyclic compounds CQ
Heterocyclic compounds CS
Six-member heterocycles CSV
Bicyclic 6-member rings CSV QE
. . . Benzopyrone CSV QEO MQP R

CSV QF Tricyclic 6-member rings
QFN S . Nitrogen heterocycles (tricyclic 6-member rings)
QFN SA . . Phenothiazine, thiophenylamine, dibenzothiazine
QFN SB . . Acridine
QFN SC . . Azine dyes
QFN SD . . Piperidine, hexahydropyridine
QFN SE . . Pyridine
QFN SF . . Picoline
QFN SG . . Two nitrogens
QFN SH . . Phenanthroline
QFN SK . . Azines
* See also Pyridine CSV QFN SE
QFN SL . . Diazine, pyrazine
QFN SM . . Pyrimidine
* For pyrimidine nucleosides and nucleotides, see CVD XB and CVG XB.
QFN SN . . . Pyrazine, diazine (1,4-diazine)
QFN SO . . Three nitrogens
QFN SP . . Methylene blue, methylthionine chloride
QFN SQ . . Triazines
QFN SR . . Four nitrogens
QG Tetracyclic 6-member ring heterocycles
* For lysergic acid, see CUA SVR NSR LRG S
QGO . Oxygen
QGO NS . . Oxygen and nitrogen
QGO NSA . . . Indigo, indigotins
R Six member heterocycles with mixed heteroatoms
RON SA . Oxygen with nitrogen heteroatoms
RON SB . . Diketopiperazine, glycine anhydride
* 2 Os and 2 Ns
RON SC . . Cytosine
* Usually considered as a nucleotide (see CVG XC).
RON SD . . Thymine
* Usually considered as a nucleotide (see CVG XD).
RON SE . . Uracil, methyluracil, methyldioxytetrahydropyrimadine
* Usualy considered as a Nucleotide (see CVG XE).
RON SF . . Guanine, 6-hydroxy-2-aminopurine
* Usually considered as a nucleotides (see CVG YL).
RON W . Phosphorus & oxygen heteroatoms
RUQ FOQ N . Sulphur & nitrogen heteroatoms
RUQ FOQ NS . . Sulphathiazole
* For sulphonamides in general, see COO QNV R.

Chemical species CG
Organic chemistry CO
Kinds of organic compounds by basic structures
. . . . . Six member heterocycles with mixed heteroatoms CSV R
. . . . . Sulphur & nitrogen heteroatoms CSV RUQ FOQ N
. . . . . Sulphathiazole CSV RUQ FOQ NS

CSV SOU . . . . . Fluorine heterocycles
. . . . . Fluorine & sulphur
SOU OQ . . . . . Fluorothiirane, fluorothiacyclopropane
UPO . . . . . Iron
VOQ . . . . . Sulphur heterocycles (6-member rings)
VOV . . . . . Chlorine heterocycles (6-member rings)
. . . . . *More than six members in ring*
CSW A . . . . . Seven-membered rings
* Use CSW B for 8-membered, CSW C for 9-, and so on.
L . . . . . 18-member rings
LME . . . . . Ethers
LME S . . . . . Eighteen-crown-six-ether
. . . . . *By special bonding structures*
* These are restricted to benzene and related aromatic compounds; see CR.

Organic compounds by element
CTB . Organometallic compounds
* This is an alternative location (not recommended) for libraries wishing to collect together all the literature on these compounds. The preferred arrangement is to locate them at COM T (for organometals in general) and for the individual metals) and to subordinate their compounds to the basic structures (aliphatic, cyclic, etc) at CP/CS, if these define the compound.
* Two different alternatives are provided here:
. . *Alternative 1*
* The particular metals (at CTB) are subordinated to the basic structures (at CTC).If this option is taken, proceed as follows:
* Add to CTB letters A/PY following CO; eg
* .....(Particular organometals)
* CTB IJ.....Complex organic compounds
* CTB MXR.....Lithium organic compounds
* CTB MXR JE....Butyl lithium
* CTB PA.....Transition metals
* CTB PO.....Iron
* CTB PX.....Mercury
* .....(Basic structures)
* .....* Add to CTC letters P/S following C:
* CTC RA.....Aromatics
* CTC RD.....Benzene
* CTC RMT.....Organometallic substituents
* CTC RPX.....Mercury
* CTC S.....)Heterocycles(
* CTC SU.....5-member hetrocycles
* CTC SUQ APO A.....Ferrocene

Organic polymers

Chemistry C
Chemical species CG
Organic chemistry CO
Organic compounds by element
. . Alternative 1

. . *Alternative 2*
* The basic structures (at CTB) are cited after the particular metals (at CTC). If this option is taken, proceed as follows:
* Add to CTB letters P/S following C;
* .....(Basic structures)
* CTB RA.....Aromatic cyclic compounds
* CTB RD.....Benzene
* CTB RMT .....Organometallic substituents
* CTB S.....Heterocycles
* CTB SU.....5-membered rings
* CTC.....(Particular organometals)
* .....* Add to CTC letters A/PX
* .....following CO.
* .....* Each metal may be divided
* .....as follows, where hyphen
* .....represents its classmark:
* .....* Add to - letters A/P
* .....following CO;
* .....* Add to -PY letters A/X
* ..... following CP;
* .....* Add to - letters Q/S
* ..... following C; eg CTC POS
* .....Iron - Heterocycles.
* CTC IJ.....Complex compounds
* CTC MXR.....Lithium
* CTC MXR JE.....Butyl lithium
* CTC PA.....Transition metals
* CTC PO.....Iron
* CTC POS U.....5-member heterocycles
* CTC POS URA.....Aromatic
* CTC POS URL.....Ferrocene
* CTC PX.....Mercury
* CTC PXR A.....Aromatic cyclics
* CTC PXR D.....Substituents of
* .....benzene

CTE Organic polymers, macromolecules (organic compounds)
* Most of the classes CTE 8/CTE S below could apply to polymers in general and would therefore normally appear at CGH GCV. But by far the greater part of the literature relates to organic polymers, so the detailed schedule for them is given here.
* See the notes at CGH GCV, which is likely to have relatively little literature on it. If in doubt, prefer this class.
* The term Polymer is sometimes used loosely for those with more than ten monomers. A work on these would go at CTF TY.
* See also Peptides CUF
* Add to CTE letters A/IN following CO. Note that specification of kinds of polymers by constituents goes at CTG IQ/CTG PY, not CTE IQ/CTE PY.

. *Operations*
8XI . . Identification

Chemistry C
Chemical species CG
Organic chemistry CO
Organic polymers CTE
Operations
. Identification CTE 8XI

CTE 8Y . Synthesis
* See also polymerization CTE CQ

Physics of chemistry
ABC LP . Low density
ABC LT . High density
ABR . Ions
ABR HUL . . Carbocation
* Positively charged ions residing on a C or group of Cs.

Chemical combination & structure
AG . Bonding
AHH . . Crosslinkage, crosslinking
AP . Stereochemistry
. . Special structural features
APV . . . Primary structure
APV 8XQ . . . . Sequencing
APW . . . Secondary structure
APW F . . . . Folding, pleating, coiling
APW H . . . . Alpha helix
APW J . . . . Beta-pleated sheet
APW L . . . . Double helix (polymer conformation), superhelical (polymers)
APX . . . Tertiary structure
* Stable folding of the sequence of units (eg of amino acids) in the secondary structure.

APX Q . . . Quaternary structure
AY . Reactions
AYG . . *Agents*
AYH . . . Intermediate reaction agents
AYI . . . Inhibitors
AYN . . . Chain-transfer agents
CQ . Polymerization (organic polymers), synthesis (organic polymers)
CQA BR . . Ionic polymerization
CQA BRH U . . . Cationic polymerization
CQA BRH V . . . Anionic polymerization
CQA BSV . . . Radical polymerization, free radical polymerization
CQC A . . Catalysis
CQC ATJ T . . . Metal-catalyzed polymerization, organometallic polymerization
CQC PH . . Addition processes
* Yield polymers whose constituent units (mers) are constitutionally identical to the reacting monomers.

CQC PL . . Condensation processes
CQC W . . Substitution processes
. . *By medium*
CQD S . . . Mass polymerization
CQF M . . . Solution polymerization

Organic polymers

Chemistry C
Chemical species CG
Organic chemistry CO
Organic polymers CTE
Chemical combination & structure
. . . Solution polymerization CTE CQF M

CTE CQF NX . . . Suspension polymerization
CQF UUL . . . . Emulsion polymerization
Polymers by state of matter
* See also Plastics CTE P
FIL . Film polymers
FNT . Dispersion polymers
FVW H . Fibres
FVW L . Sheet polymers
FW . Crystalline polymers
H *Kinds of polymers*
* Classes CTE HG/CTF X below are for general works only on the species named; they are not used to qualify the kinds of polymers by constituent elements at CTG.
* Add to CTE H letters GB/GD following C; eg,
HGB CLP . Low density polymers
HGB CLT . High density polymers
HGC OQ . *By chain structure*
HGC OR . . Open chain
HGC OS . . . Straight chain
HGC OSC Q . . . . Linear polymerization
HGC OU . . . Branched chain
HGC OV . . . . Crosslinked
HGC OW . . Closed chain, ring
HGD CA . Catalytic polymers
HGD CB . . Ziegler-Natta catalysts
HGD COY . Natural polymers
HGD CPB . Synthetic polymers
HGD CPH C . Addition polymers
HGD CPL . Condensation polymers
HGD CW . Substitution polymers
. Special structures
HGX G . . Stereoregular polymers
* Asymmetric carbon atoms alternate along main chain.
HGX I . . . Isotactic polymers
HGX K . . . Syndiotactic polymers
HGX L . . . Atactic polymers
HGX P . . Amorphous polymers
Kinds of polymers by behaviour
* Normal retroactive notation (using CTE IQ/CTE OY for (Kinds of polymers by constituent elements) is interrupted here; it is resumed at CTG IX.
P . Plastics (polymers)
* Nearly all the literature belongs to Technology (VO).
T . . Thermoplastic polymers, flexible polymers
V . . Thermosetting polymers, rigid polymers
W . . . High impact polymers

Chemistry C
Chemical species CG
Organic chemistry CO
Organic polymers CTE
Kinds of polymers by behaviour
. . . High impact polymers CTE W

Kinds by variety of monomers
* All the monomers are the same.
CTF G . Copolymers
* More than one type of monomer.
GCQ . . Copolymerization process
Kinds by number of monomers
J . Monomers (organic polymers)
* Small molecules of high reactivity and capable of linking with themselves in polymerization.
* See also Polypeptides CUG JS
K . . Oligomers
* Sometimes used to mean up to 10 monomers.
L . . . Dimers
M . . . Trimers
N . . . Tetramers
O . . . Pentamers
P . . . Hexamers
Q . . . Heptamers
R . . . Octamers
S . . . Nonamers
T . . . Decamers
TY . . Polymers with more than 10 monomers
* The term Polymers is sometimes used with this meaning.
V . . . Undecamers
W . . . Duodecamers
X . . . More than 12 monomers
CTG *Kinds of polymers by constituent elements*
* Normal retroactive notation is resumed here after its interruption at CTE IX
. *By groups containing H, C & O*
* Add to CTG letters IX/MP following CO; eg,
MH . . Aldehyde polymers
MP . . Polyesters
MPN . . Polyacetates
. *By compounds containing heteroatoms*
* Add to CTG letters MX/OY following CO;
* Add to CTG OZ letters A/Y following COP; eg,
NNO . . Polysilicones
NT . . Polyamines
NTR . . Polyurethane
NVR . . Polyamides
NVS . . Polyimides
NVU . . Isocyanates
OQM Q . . Polysulphides
OT . . Polyhalides
OU . . . Fluorine polymers
OUK C . . . . Polytetrafluoroethylene, PTFE, Teflon
OUN M . . . . Fluorocarbons
OUO V . . . Polychlorotrifluorine
OVO U . . . Chlorofluorocarbons, CFC, freons

Biologically significant organic compounds

Chemistry C
Chemical species CG
Organic chemistry CO
Organic polymers CTE
. . By compounds containing heteroatoms
. . . . Chlorofluorocarbons CTG OVO U

. . *By basic structures*
* Add to CTG PU letters following COJ; add to CTG PV letters following COK, eg

CTG PVB . . . Methylene
PVB MH . . . . Polymethylene glycols
PVC . . . Ethene
PVC OV . . . . Polyvinylchlorides, PVC, vinylchloride polymers, polychloroethene
PVD . . . Polypropylene, polypropene
PVQ . . . Dienes
PVQ S . . . . Polyisoprenes
* For terpenes, see CTO.
PVQ T . . . . Rubber, natural rubber
* For synthetic rubber, see Chemical technology VL in Class U/V.
PVQ U . . . . Guttapercha
* Isomeric with rubber.
PVR . . . Trienes
RD . . . Benzene polymers
. . . . Ethenylbenzene, vinyl benzene
RKA . . . . . Styrene polymers, polystyrene, polymerized phenylethene
* See also Chlorofluorocarbons, CFC, freons CTG OVO UNM
RLT . . . . . Phenol
RLT MH . . . . . Phenolaldehyde polymers, bakelite
. . . . . Phenyl ethers
RME . . . . . Polyoxyphenylenes, polyphenylene oxides, polyphenylene ethers
RQE OV . . . . Polychlorinated biphenyls
S . . Heterocyclic polymers
. . . Four-membered rings
SUR QRM . . . . Tetrahydrofuran polymers, THF, polyoxytetramethylene glycols
SUR R . . . Sulphur five-membered ring heteroatoms
SUR RRM . . . . Tetrahydrothiophen, THT, tetramethylene sulphide
U . . . Special to a given context
* Notation is reserved here for use when applicable; eg, saccharides in carbohydrates; amino acids in peptides.

CTH Biologically significant organic compounds
* The compounds below are found primarily in various forms of life (microbiological, botanical or zoological). They and their attendant processes are all to be found in Biochemistry EC in Class E.

Chemistry C
Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH

* This class takes only strictly chemical studies of the substances concerned. All works which consider their role in metabolism or other biological processes go in Class EC Biochemistry. A very limited number of those processes which are governed and/or defined by their chemical reactions are located here. In cases of doubt, prefer Class E.
* The classes provided for the compounds are often associated closely with the plants, etc. which constitute their unique or main origin or with the biological or other properties which characterize them (eg as enzymes). A substantial chemical literature exists on compounds which is provided for here.
* They are treated here as special classes because they do not conform entirely to the main division of organic compounds into aliphatic and cyclic. Within these classes, the IUPAC nomenclature which is appropriate for their chemical characteristics is often replaced by the more usable names which have established themselves in particular areas, such as carbohydrates, alkaloids, terpenes, etc.
* In the case of those major classes which could be located reasonably closely to a purely structurally defined class, an alternative location is provided which collocates it with that class; eg, CTJ Lipids.
* Add to CTH letters IX/OY following CO, with the additions indicated at CTH DP below.
* Add to CTH P letters A/X following COP.

CTH B . Physical biochemistry
DP . Reactions special to biochemistry
* Add to CTH DP letters V/Y following EB; eg
DPV M . . Biochemical cycles
DPW . . Metabolism
* Processes whereby organisms create and maintain their substance and energy.
. *Kinds of substances in biochemical reactions*
I . . Metabolites
* Substances participating in metabolism. Chemical studies only; if in doubt, prefer Biochemistry EC.
J . . Bioinorganic compounds
* Add to CTH letters J/NY following C;
CTI . . Organic compounds in biochemical reactions
* Excluding those enumerated at CTJ/CWH.
* Add to CTI letters IX/OY following CO;
* Add to CTI OY letters A/X following COP;
* Add to CTI letters P/S following C.

Lipids

Chemistry C
Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Kinds of substances in biochemical reactions
. Organic compounds in biochemical reactions CTI

CTJ Lipids, lipins, lipoids
* Containing long-chain aliphatic hydrocarbons and their derivatives.
* Add to CTJ letters A/P following CP (Aliphatics); eg,
. Reactions
CCA . . Catalysis
* For enzymes, see CUL Proteins.
CCA TT . . . Lipase
. *Kinds of lipids by properties/processes*
HGK R . . Saturated
HGK S . . Unsaturated
. *Kinds by constituent elements*
LT . . Alcohols
MM . . Fatty acids
MP . . Esters
* For specific kinds of esters (eg waxes) see below; eg, CTL Phospholipids.
. *Lipids by basic structures*
W . . Simple lipids
* Do not contain fatty acids and include steroids and terpenes.
X . . Compound lipids, complex lipids
* Esters of long-chain fatty acids; include phospholipids and glycerides.
Y . . Fats & waxes
CTK . . . Fats
. . . . *By state of matter*
FU . . . . . Liquid
* For oils, use CTK V.
HGK R . . . . Saturated fats
HGK S . . . . Unsaturated fats
M . . . . Acids
MM . . . . . Essential fatty acids
. . . . . Specific acids
MNB . . . . . Palmitic acid
MNE . . . . . Oleic acid
MNH . . . . . Stearic acid
. . . . *Kinds of fats by biological action*
TD . . . . . Dietary fats
V . . . . Oils
VW . . . . . Essential oils, volatile oils
. . . . . Specific oils
VXC . . . . . Croton oil
VXE . . . . . Sesame oil
VXG . . . . . Cottonseed oil
VXH . . . . . Gossypol
W . . . . Waxes
WV . . . . . Mineral waxes
WW . . . . . Paraffin wax
. . . . . Organic secretions
WX . . . . . Beeswax

Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Lipids CTJ
Fats & waxes CTJ Y
. . . . Beeswax CTK WX

CTL Phospholipids, phosphatides
* Esters of phosphoric acid containing molecules of fatty acids, alcohols and nitrogenous bases.
* For phosphoglycerides, see CTM V.
V . Sphingolipids
CTM Glycerides, acylglycerol
* Fatty-acid esters of glycerol.
. *By number & nature of substituent on hydroxyl group*
TM . . Monoglycerides
TN . . Diglycerides
TQ . . Triglycerides
TS . . . Simple triglycerides
TT . . . . Triolein
TX . . . Mixed triglycerides
V . . Phosphoglycerides
* See also Phospholipids CTL
W . . Glycolipids
* See also Glycosides CTY B
X . . . Cerebrosides
CTN Steroids
LT . Alcohols
* For sterols, see CTN U.
. Ketones
MK . . Sterones
. Acids
MM . . Bile acids
MNC . . . Cholic acid
MNE . . . . Lithocholic acid
MNG . . . . Glycocholic acid
. *Kinds of steroids by structure*
TB . . Androstanes
TD . . Androstenes
TE . . . Androsterols
TG . . Cholanes
TJ . . Cholestanes
TL . . . Cholestenes
TN . . . Cholestenones
TP . . . . Ecdysone
U . . Sterols
UT . . . Cholesterol
V . . Pregnanes
W . . . Pregnenes
* Do not occur naturally. Basic HC skeleton of biologically important steroids.

Terpenes

Chemistry C
Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Lipids CTJ
. . . . . Pregnenes CTN W

CTO Terpenes, polyisoprenes
* Polymers of isoprene (C5H8); unsaturated, aromatic, very reactive, volatile carbohydrates, both open-chain and cyclic; mainly plant products.
* For natural rubber, see CTG PVQ T (under polymers).
* Add to CTO letters A/X following CTE (Polymers).
* Add to CTO Y letters G/X following CTF.
. *Kinds of terpenes by number of isoprenes*
* Add to CTP letters J/S following CTF.
* Add to CTP T letters T/X following CTF.

CTP L . . Monoterpenes
* With 2 isoprene units (ie C10H16).

LV . . . Monocyclic monoterpenes
LVL T . . . . Alcohols
LVL YB . . . . . Terpinenols
* Monocyclic terpene alcohols obtained from terpinenes.
LVL YC . . . . . Terpineols
* Monocyclic terpene alcohols obtained from terpin.
LVL YD . . . . . Alpha-terpineol
LVL YE . . . . . Borneol, Borneo camphor, bornyl alcohol, camphanol, hydroxycamphane
LVL YG . . . . . Geraniol, dimethyl-octadienol
LVL YM . . . . . Menthol, hexahydrothymol, hydroxymethane, menthacamphor, methylhydroxyisopropylcyclohexane, peppermint camphor
LVL YN . . . . . Citronellol, dihydrogeraniol
. . . . Aldehydes
LVM H . . . . . Citronellal, rhodinal
. . . . Ketones
LVM K . . . . . Irone
. . . . Acetates
LVM PNJ C . . . . . Terpinyl acetate
LVV . . . . Terpinenes
LVW A . . . . . Alpha terpinene
LVW B . . . . . Beta terpinene
LVW C . . . . . Gamma terpinene
LVX B . . . . Terpinolenes
LVX D . . . . Limonene, citrene, carvene, menthadiene, hesperidene
LW . . . Dicyclic monoterpenes
LWI X . . . . Hydrocarbons
LWI XY . . . . . Pinene, nopinene, turpentine
LWI YA . . . . . Alpha-pinene
LWI YB . . . . . Beta-pinene

Biologically significant organic compounds CTH
Terpenes CTO
. . Monoterpenes CTP L
. . . . Hydrocarbons CTP LWI X
. . . . . Pinene CTP LWI XY
. . . . . Beta-pinene CTP LWI YB

CTP LWI YD . . . . . Camphene, dimethyl-methylenenorcamphane
. . . . Ketones
LWM K . . . . . Camphor
M . . Sesquiterpenes
* With 3 isoprene units.
N . . Diterpenes
* With 4 isoprene units.
. . . Alcohols
NLT . . . . Phytol, tetramethylhexadecenol
P . . Triterpenes
* Theoretically , with 6 isoprene units; contain 30 C atoms and are derived from C30H50.
PKD . . . Squalene
PLY B . . . Tetracyclic
PLY CT . . . . Lanosterol, isocholesterol
R . . Tetraterpenes
* For carotenoids and lycopene, see CWF KK.
W Terpenoids

CTQ Carbohydrates
* A major group of naturally occurring organic compounds with the generalized formula Cm(H2O)n.
* For oxygen heteroatoms in general, see Heterocycles CS.
* Add to CTQ letters A/O following CO.
* Add to CTQ OY letters A/Y following COP.
* Add to CTQ letters P/S following C.

U . Sugars, saccharides
* Use this location only if distinguished from the class of carbohydrates in general (for which these terms are often used as synonyms). If in doubt, prefer CTQ.
* This class and any given class of sugar may be qualified as follows (where the hyphen represents its classmark):
* Add to - letters A/S following CTQ.

CTR . Monosaccharides, simple sugars, single sugars
* Can exist either as straight-chain polyhydric alcohols or as cyclic compounds.
* For polysaccharides, see CTV B.
. . Aldehydes
MH . . . Aldoses
. . Ketones
MK . . . Ketoses

Carbohydrates

Organic chemistry CO
Biologically significant organic compounds CTH
Carbohydrates CTQ
Monosaccharides CTR
. Ketones
. . Ketoses CTR MK

. *Kinds of monosaccharides by number of C atoms in chain*

CTR U . . Trioses
UMH . . . Glyceraldehyde
V . . Tetroses
VU . . . Erythrose
VW . . . Threose
W . . Pentoses
WT . . . Arabinose
WU . . . Xylose, wood sugar
WV . . . Lyxose
WW . . . Rhamnose
WX . . . Fucose, galactomethylose, rhodeose
CTS . . . Ribose
CTT . . . Deoxyribose
CTU B . . Hexoses
BMH . . . Aldohexose
BMK . . . Ketohexoses
D . . . Fructose
E . . . . Levulose, laevulose, fruit sugar
G . . . Glucose
* For glucosides, see under glycosides at CTY G.
H . . . . Dextrose, corn sugar, grape sugar
* For dextrans, see under polysaccharides at CTV W.
J . . . . Sorbose, sorbin
L . . . Galactose
M . . . Mannose
P . . Heptoses
R . . Higher monosaccharides

CTV B Polysaccharides
* Sometimes used only for four or more monosaccharides combined.
C . Homopolysaccharides
* Usually assumed.
D . Heteropolysaccharides
* Consisting of two or more different monosaccharides.
* See also Mucopolysaccharides CTX M
E . Non-sugar polysaccharides
G . Oligosaccharides, compound sugars
* Sugars with 2-8 monosaccharide units.
H . . Disaccharides
J . . . Sucrose, saccharose, cane sugar, beet sugar, table sugar
L . . . Lactose, milk sugar, lactin
M . . . Maltose, malt sugar, maltobiose
P . . Trisaccharides
Q . . . Raffinose, melitose, gossypose

Organic chemistry CO
Biologically significant organic compounds CTH
Carbohydrates CTQ
Polysaccharides CTV B
. . Trisaccharides CTV P
. . . Raffinose CTV Q

CTV R . . Hemicellulose
* Ill-defined term; sometimes used for a series of hexoses and pentoses and sometimes equated with hexosans.
S . . . Pentosans
T . . . Hexosans
U . . . Fructosans
UW . . . . Inulin
V Glucosans
W . Dextrans
CTW . Starch
U . . Amylose
V . . Amylopectin
W . . Dextrins, cyclodextrins, corn syrup
* Polymers of D-glucose.
X . . Glycogen, animal starch
CTX C . Cellulose
* A polymer of B-D-glucose units; the main polysaccharide in plants.
* For hemicellulose, see CTV R.
CME . . Cellulose ethers
CMP . . Cellulose esters
CMP N . . . Cellulose acetate
CNV QQ . . Cellulose nitrate, nitrocellulose, nitrocotton
E . . Lignocellulose
G . . Mannocellulose
H . . . Tunicin
J . Chitin
M . Mucopolysaccharides
* Contain an amino sugar and uronic acid in a repeating disaccharide unit.
MU . . Chondroitin
MV . . Heparin
MW . . Hyaluronic acid
N . Pectins
P . Pyrogens
Q . Sweetening agents
R . . Cyclamates
S . . Saccharin, benzosulphimide, gluside
T . . Aspartame

CTY B Glycosides
* Sugar derivatives in which the hydroxyl group attached to carbon 1 is substituted by another functional group (alcohol, phenol, etc).
* Glycosides cover all such compounds, whatever the sugar.
* For nucleosides, see CVC.
* Add to CTY B letters A/O following CO;
* Add to CTY BOY letters A/Y following COP so far as applicable.
* Add to CTY B letters P/S following C.

Alkaloids

Chemistry C
Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Carbohydrates CTQ
Glycosides CTY B

Kinds of glycosides by source

CTY CC . Convallaria glycosides
CD . Digitalis glycosides
CF . Strophanthin glycosides
CH . . Cymarine glycosides
CJ . . Ouabain glycosides

Kinds of glycosides by action

* Purely chemical studies only; if in doubt, prefer Biochemistry EC in Class E.

CN . Antibiotic glycosides
* See also Aminoglycosides CTY D
CP . . Lincomycin
CR . Cardiac glycosides
CT . Pigment glycosides

Kinds of glycosides by constituents

* For nucleosides & nucleotides, see CVB.

D . Aminoglycosides
E . . Specific compounds, A/Z
ENE . . . Neomycin
EST . . . Streptomycin
G . Glucosides
* Contain glucose as the sugar.
GV . . Phlorizin
H . Galactosides
* See also Cerebrosides CTM X
J . Tannic acid, tannin, gallotannic acid
K . Saponins
* Steroid vegetable glycosides.
L . Flavonoids, flavonol glycosides, bioflavonoids
LV . . Flavone glycosides
M . . . Specific compounds, A/Z
MRU . . . . Rutin
N . . Flavonol glycosides
O . . . Specific compounds, A/Z
OSE . . . . Serotin
P . . Anthocyanins
* See also CWF J Kinds of pigments by substance

Chemistry C
Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Carbohydrates CTQ
. . . . Anthocyanins CTY P

CUA Alkaloids
* Nitrogenous heterocyclic bases existing in combination with organic acids to form crystalline salts. They are nearly all of plant origin and form the basis of many drugs.
* See also Terpenoids CTP W; Steroids CTN
* Add to CUA letters A/RI following CQ and letter S following C; note that the letters RP for nitrogen in notation at CSR P Nitrogen heterocycles may be omitted here, since all the alkaloids are by definition nitrogenous.

. *Kinds of alkaloids by structure*

* Although the following classes are taken from CS Heterocycles they should be distinguished from the heterocyclic compounds from which they are taken by the fact that here they represent only the alkaloids derived from those structures; eg,

SU . . Five-member heterocycles
SUR M . . . Monoheteroatom
SUR MRK . . . . Saturated
SUR MRK QB . . . . . Monocyclic
SUR MRK QBS . . . . . Pyrrolidine alkaloids
SUR MRK QBT . . . . . Pyrrolizidines
SUR MRK QBV . . . . . Piperidine alkaloids
SUR MRK QBW . . . . . Lobeline
SUR MRL . . . . Unsaturated
SUR MRL QB . . . . . Monocyclic
SUR MRL QBS . . . . . Pyrrole alkaloids
SUR MRL QBT . . . . . Pyridine alkaloids
* See also Nicotine CUA SVR NSR LRE S
SUR MRL RE . . . . . Bicyclic
SUR MRL RES . . . . . Indole alkaloids
SV . . Six-member heterocycles
SVR M . . . Monoheteroatom
SVR MRL . . . . Unsaturated
SVR MRL RE . . . . . Bicyclic
SVR MRL RES . . . . . Quinoline alkaloids
SVR MRL RET . . . . . Isoquinoline alkaloids
SVR NS . . . Two nitrogens
SVR NSR L . . . . Unsaturated
SVR NSR LQN . . . . . Condensed
SVR NSR LRE . . . . . Bicyclic
SVR NSR LRE S . . . . . Nicotine, methylpyrrolidylpyridine
SVR NSR LRG . . . . . Tetracyclic

Alkaloids

Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Alkaloids CUA
Kinds of alkaloids by structure
. . . . . Tetracyclic CUA SVR NSR LRG

CUA SVR NSR LRG S . . . . . Lysergic acid
SVR NSR LRG T . . . . . LSD, lysergic acid diethylamide

Kinds of alkaloids by plant origin

TB . Aconite bases
TC . . Aconine
TD . . Aconitine
TG . Calabar bases
TH . . Physostigmine, calabarine, eserine
TK . Cinchona bases
* See also Quinoline CUA SVR MRL RES
TL . . Cinchonine
TM . . Cinchonamine
TN . . Quinine
TO . . . Quinidine
TR . Coca bases
* See also Solanaceae bases CUB G
TS . . Cocaine
TT . Colchicine
UC . Corynanthe johimbe bases, yohimbe
UD . . Yohimbine
UE . . Rauwolfia
UF . . . Reserpine
UJ . Curare bases
* See also Strychnos bases CUB H
UK . Ephedra bases
UL . . Ephedrine
UO . Ergot bases
UP . . Hydrogenated ergot alkaloids
UQ . . Ergotoxine
UR . . . Ergotinine
US . . Ergotamine
UT . . Ergometrine
UV . . Ergotine
* For Lysergic acid, see CUA SVR NSR LRG S.
VB . Ipecacuanha bases
VC . . Emetine
VE . Liliaceae bases
* See also Colchicine CUA TT
VF . . Veratrine
VI . Mescal bases
VJ . . Mescaline
VM . Muscarine bases
CUB B . Papaveraceae bases
C . . Opium
CT . . . Morphinans
CV . . . . Levorphanol

Biologically significant organic compounds CTH
Alkaloids CUA
. Kinds of alkaloids by plant origin
. . Papaveraceae bases CUB B
. . . Opium CUB C
. . . . Morphinans CUB CT
. . . . . Levorphanol CUB CV

CUB D . . . . . Morphine
DT . . . . . Codeine, methylmorphine
DU . . . . . Diacetylmorphine, diamorphine, heroin
DV . . . . . Aporphine
DW . . . . . Apomorphine
DX . . . . Papaverine
E . . . Chelidonine
EV . . Ricinus bases
* See also Albumins (protein) CUJ F
EW . . . Castor oil
F . . Rutaceae bases
FT . . . Pilocarpine
FV . . . Harmine
FW . . . Harmatine
G . . Solanaceae bases
GT . . . Tropane bases
* For cocaine, see CUA TS.
GU . . . . Belladonna, deadly nightshade
GV . . . . . Atropine
GW . . . . Henbane, hyocyamine
GX . . . . Scopolamine, hyoscine
H . . Strychnos bases
I . . . Nux vomica bases
J . . . . Strychnine
JT . . . . . Brucine
K . . . Curare
KT . . . . Curarine
KV . . . . Curine, bebeerine, berberine
* See also Quinoline CUA SVR MRL RES
KW . . . . Toxiferine
L . . Veratrum bases
LT . . . Cevanes
LV . . . . Veratrine
LW . . . . . Veratridine
M . . Vinca bases
MT . . . Vincristine
N . . Xanthene bases
NT . . . Caffeine
NV . . . Theophylline
Q . . Other plant alkaloids, A/Z
S . *Kinds of alkaloids by animal origin*
TB . . Ptomaines
CUC Y Amino acids & peptides & proteins (together)

CUD Amino acids, aminocarboxylic acids
* All have at least one amino group and one carboxylic group. More than 500 are known in nature; about 30 are found in proteins (of which amino acids are the building blocks) and only 20 are common.

Amino acids

Chemistry C
Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Amino acids CUD

* An alternative (not recommended) is to use CUD IX/CUD S to give a fully structural classification of the acids. See the notes preceding CUD IX and the examples given.
* Another alternative (not recommended) for libraries wishing to locate this class with organic compounds in general (where they are distributed by basic structures) begins at CON U (see the notes there).
* The preferred arrangement for the specific amino acids is the simplified one of the 'standard' amino acids (on which nearly all the literature is focused) at CUE. Provision is made at CUD for general works on the acids by their constituent elements and basic structure (aliphatic, cyclic, heterocyclic).
* Add to CUD letters A/PY following CO; eg,

CUD 8Y . Synthesis
. *Kinds of amino acids by bonding characteristics*
HGK YB . . Polar
HGK YD . . Dipolar
HGK YF . . Non-polar, hydrophobic
* For glycine, see CUE B.
. *Kinds by molecular structure*
HGT T . . Optical isomers
HGT U . . Enantiomers
. *Kinds by attachment to C atom*
HGX A . . Alpha-amino acids, protein amino acids, essential amino acids
HGX B . . Beta-amino acids
HGX C . . Gamma-amino acids
HGX D . . Delta-amino acids
. *Kinds by basicity*
IAP . . Neutral amino acids
IAQ . . Acidic amino acids
IAR . . Basic amino acids
. *Kinds by constituent elements*
* See notes at CUD; the preferred arrangement is to locate specific amino acids, characterized by their side chains, at CUE.
* Add to CUD letters IX/PY following CO;
* Add to CUD PZ letters A/W following CP;
* Add to CUD letters Q/S following C; eg
IX . . With hydrogen alone
* For example, glycine.
JD . . Propyl
* For example, serine.
JE . . Butyl
* For example, alanine.
NT . . Amines
* For example, asparagine
NVR . . Amides
* For example, glutamine.

Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Amino acids CUD
Kinds by constituent elements
. Amides CUD NVR

Kinds by basic structure
CUD PZ . Aliphatic amino acids
RB . Aromatic amino acids
RD . . Benzene
RJD . . . Propyl
* For example, tyrosine CUE P.
S . Heterocyclic amino acids
SU . . Five-membered ring
SUR P . . . Nitrogen heteroatom
SUR PRM . . . . Monoheteroatom
SUR PRM RLQ B . . . . . Monocyclic
* For example, proline CUE L.
Kinds by number of aminos
TJ . Monoamino acids
TK . Polyamino acids
TL . . Diamino acids
CUE *Kinds by side chain*
* This is the preferred arrangement of specific amino acids. See notes at CUD on the alternatives given.
. With hydrogen alone
B . . Glycine, aminoacetic acid, aminoethanoic acid, glycocoll
BY . Alkyl amino acids
C . . Aminobutyric acid, GABA, piperidic acid
D . . Aminoisobutyric acid
E . . Alanine, aminopropanoic acid
F . . Beta-alanine
G . . Valine, aminomethylbutanoic acid, aminomethylbutyric acid, aminoisovaleric acid
H . . Leucine, aminoisocaproic acid, monocarboxylic essential amino acid, aminomethylpentanoic acid
I . . Isoleucine
J . . Phenylalanine, aminophenylpropanoic acid, aminohydrocinnamic acid
K . . . Dihydroxyphenylalanine, dopa
L . . Proline, pyrrolidinecarboxylic acid
M . . . Hydroxyproline, pyrrolidine-2-carboxylic acid
MY . Hydroxy-containing amino acids
N . . Serine
O . . Threonine, aminohydroxybutanoic acid
P . . Tyrosine, aminohydroxyphenylpropanoic acid

Peptides

Organic chemistry CO
Biologically significant organic compounds CTH
Amino acids CUD
. Kinds by side chain CUE
. . Hydroxy-containing amino acids CUE MY
. . . Tyrosine CUE P

CUE PT . . Carboxy-containing amino acids
* For asparagine and glutamine, see amino-containing amino acids CUE RY.
. . . *By number of carboxyls*
PU . . . . Monocarboxylic amino acids
PV . . . . Polycarboxylic amino acids
PW . . . . . Dicarboxylic amino acids
Q . . . Aspartic acid, aminobutanedioic acid
R . . . Glutamic acid, aminopentanedioic acid
RY . . Amino-containing amino acids
SB . . . Asparagine
SD . . . Glutamine
SF . . . Lysine, diaminocaproic acid, diaminohexanoic acid
SH . . . Arginine, aminoguanidinopentanoic acid
SJ . . . Tryptophan, aminoindolepropanoic acid
SL . . . Histidine, aminoimidazolepropionic acid
SQ . . Sulphide-containing amino acids, mercapto amino acids, sulphur amino acids
SR . . . Cysteine, aminothiolpropionic acid, mercaptoalanine, aminomercaptopropanoic acid
ST . . . Methionine, aminothiohexanoic acid, aminomethylthiobutanoic acid
T . Other amino acids, A/Z
TCY . . Cyanoalanine
TDE . . Desmosine

CUF Peptides
* Polyamino acids linked (with rare exceptions) by the peptide bond (-CO.NH-) and formed by condensation of the carboxyl group (COOH) and the amine group (NH2). They are nearly always parts of much larger proteins.
* Add to CUF letters A/X following CTE (Polymers);
AG . Bonding
AHI . . Amide linkage (peptides), peptide bond
AHJ . . Disulphide linkage (peptides)
AP . Stereochemistry
. . Special structures
APV . . . Primary structure
APV 8XQ . . . . Sequencing
CA . Catalysis
CAT T . . Peptidases
* Proteolytic enzymes.
CAT U . . . Endopeptidases
CAT V . . . Exopeptidases
CQ . Polymerization, synthesis
CQS . . Solid phase techniques, Merrifield method

Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Peptides CUF
Polymerization, synthesis CUF CQ
. Solid phase techniques CUF CQS

Kinds of peptides
. Special structures
CUF GHG XG . . Stereoregular peptides
GHG XR . . Peptide residues
IX . *By constituent elements & basic structures*
* The main use of this class is to accommodate general works (eg cyclic peptides) not provided for in the enumeration at CUG. Specific polypeptides are subordinated to the number of amino acids in the chain (see CUG).
* Add to CUF letters IX/OY following CO;
* Add to CUF OZ letters A/Y following COP.
* Add to CUF letters P/S following C; eg,
Q . . Cyclic peptides
. *By number of amino acids in chain*
* Add to CUG letters G/X following CTF; eg
CUG JS . . Polypeptides
* Use this general class (CUG JS) only for works dealing with the phenomenon of multiple monomers in general. If in doubt, use the general classmark CUF.
* Polypeptides are often characterized by the sequence of their constituent amino acids, given in a recognized abbreviated form (eg Isoleucyllysylmethionyltyrosine is given as Leu-Lys-Meth-Tyr) and their arrangement under a given class may be alphabetically by these. Note that the terminal -ine is changed to -yl for all but the last amino acid in the chain.
JT . . . Kinins
* Number of amino acids varies.
K . . . Oligopeptides
* Up to nine amino acids.
LD . . . . Dipeptides
LE . . . . . Alanylalanine
LG . . . . . Alanylglycine
LJ . . . . . Anserine
* Contains amino acid B-alanine (not found in protein).
LK . . . . . Carnosine, alanylhistidine
* Contains B-alanine.
LN . . . . . Glycylglycine, diglycine
MD . . . . Tripeptides
MG . . . . . Glutathione, glutamylcysteinylglycine
ML . . . . . Glycylserylcysteine
ND . . . . Tetrapeptides
NI . . . . . Isoleucyllysylmethionyltyrosine
SD . . . . Nonapeptides
SK . . . . . Bradykinin, callideic-I, kallidin-I
SO . . . . . Oxytocin
TD . . . Decapeptides
TG . . . . Angiotensin

Proteins

Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Peptides CUF
. . . . Decapeptides CUG TD
. . . . . Angiotensin CUG TG

CUG WD . . . . Duodecapeptides
WH . . . . . Bacitracin
X . . . . More than twelve amino acids
Y Other biologically significant amine derivative, A/Z
YHI . Histamine, aminoethylimidazole, imidazolylethylamine

CUH Proteins
* High molecular weight polymers composed of a variety of amino acids joined by peptide linkage. Molecular weight is between 5000 and 6 million; but the dividing line between peptides and proteins is ill-defined.
* Proteins are made on ribosomes within the cell cytoplasm; each constituent peptide chain is generated by the linking of amino acids in an order specified by the nucleic acids of the cell.
* For nucleic acids, see CVH.
* Add to CUH letters A/IN following CO;

APV . Primary structure
APW . Secondary structure
APX . Tertiary structure
BX . Precursors
* See also CUM Proenzymes

CA . Catalysis
* For enzymes, see CUL.

IX . *Kinds of proteins by constituent elements*
* For general works on these; specific proteins are enumerated in CUJ/K.
* Add to CUH letters IX/OY following CO;
* Add to CUH OZ letters A/Y following COP.

. *Kinds by basic structures*
* Add to CUH letters P/S following C.

X . *Kinds by special protein properties*
* Each kind may be divided as follows (where the hyphen represents its classmark):
* Add to - letters A/S following CUH;
* Add to -X letters T/X following CTE;
* Add to -Y letters G/X following CTF.

CUI D . . Derived proteins
E . . . Primary protein derivatives
F . . . Secondary protein derivatives
FT . . . . Proteoses
* Intermediate between native proteins and peptones.

FV . . . . Peptones
* Derived from degradation of proteins by enzymes.

. *Kinds of proteins by biological function*
* In Class E this array (defined by purpose) is cited before proteins defined structurally. In the context of chemistry proper the characteristic of biological function is subordinate to that of structure.

Chemistry C
Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Proteins CUH
Kinds of proteins by biological function

CUI L . Structural proteins
* Usually fibrous in structure; eg scleroproteins.

M . Storage proteins
N . Catalytic & regulatory
* Usually globular in structure.
* For enzymes, see CUL.

O . . Transcription proteins
P . Carrier proteins, binding proteins, transport proteins
Q . Contractile proteins

. *Kinds by organism or part of organism concerned*
* The literature may not differentiate clearly the biological function and the chemistry per se. Should the distinction be clear, locate the latter here and proceed as follows:

S . . Plant proteins
* Add to CUI S letters A/Y following FCT in Class F.

T . . Animal proteins
* Add to CUI T letters A/Y following GCT in Class G; eg serum globulins CUI TM.

Kinds of proteins by constituents

CUJ B . Simple proteins
* On hydrolysis, yield only amino acids.

D . . Protamines
* See also Nucleoproteins CUK O

E . . Histones
F . . Albumins
FV . . . C-reactive proteins
FW . . . Ovalbumin
FX . . . Serum albumin
* For thyroxine binding protein, see CUK JX.

FXV . . . . Radio-iodinated serum albumin
FY . . . Other albumins
* Arrange A/Z.

G . . Globulins, euglobulins, pseudoglobulins
GV . . . Lactoglobulins
H . . . Serum globulins
* For thyroglobulins, see CUK KJ.
* See also Metalloproteins CUK C

IA . . . . Alpha globulins
IB . . . . Beta globulins
ID . . . . . Properdin
* For transferrin, see CUK DH.

IG . . . . Gamma globulins
II . . . . Immunoglobulins, Ig (immunoglobulins)
JA . . . . . IgA (immunoglobulin)
JD . . . . . IgD (immunoglobulin)
JE . . . . . IgE (immunoglobulin)
JG . . . . . IgG (immunoglobulin)
JM . . . . . IgM (immunoglobulin)
JP . . . . . Paraproteins
JQ . . . . . Bence-Jones protein

Compound proteins

Biologically significant organic compounds CTH
Proteins CUH
Simple proteins CUJ B
. Globulins CUJ G
. . Serum globulins CUJ H
. . . . . Bence-Jones protein CUJ JQ

CUJ JT . . Foetal globulin
L . Prolamins
* Simple plant proteins.
. . Derivatives
MG . . . Gluten
MI . . Gliadin
MN . . Zein
N . Glutelins
* For gluten, see CUJ MG.
O . . Glutenin, oryzenin
P . Scleroproteins
Q . . Collagen
R . . Elastin
S . . Fibroin
T . . Gelatin
U . . Keratin
V . . Reticulin

CUK B Compound proteins, conjugated proteins
* Proteins combined with non-proteins.
BCA . Prosthetic groups
* Non-proteins essential to enzyme action.
* See also Coenzymes CUL O
C . Metalloproteins
* For chromoproteins and haemoproteins, see CUK Q.
DF . . Ferritin
DH . . Transferrin
DQ . . Iron-sulphur proteins
DR . . . Ferredoxins
E . Phosphoproteins
FC . . Casein
FE . . Vitellin
FI . . Ichthulin
FL . . Lecithoproteins
G . Lipoproteins
HA . . Alpha-lipoproteins
HB . . Beta-lipoproteins
HL . . Chylomicrons
I . Glycoproteins, glycopeptides
* Compounds of proteins with carbohydrates.
J . . Globulins
JX . . . Thyroxine binding globulin
KA . . . Alphaglobulins
KG . . . Transcortin, corticosteroid binding globulin
KH . . . Haemopexin
KJ . . . Thyroglobulin
KP . . . Haptoglobin
L . . Amyloids

Organic chemistry CO
Biologically significant organic compounds CTH
Proteins CUH
Kinds of proteins by constituents
. . Glycoproteins CUK I
. . . Amyloids CUK L

CUK M . . . Mucoproteins, mucoids
* See also Gastrone (hormones) CVX RV
NI . . . . Intrinsic factor (glycoproteins), gastric intrinsic factor, GIF
* See also Vitamin B12 CWC S
NM . . . . Mucin
* See also Dextrans CTV W
O . . Nucleoproteins
* Present in the nuclei of all cells; chromosomes are large nucleoproteins and some viruses and bacteria are pure nucleoproteins.
* For nucleic acids (which form the prosthetic group of nucleoproteins), see CVH.
* See also Protamines CUJ D
PJ . . . Histones, nucleohistones
PM . . . Chromatin
Q . . Chromoproteins
* Combinations of protein with a metal-containing pigment.
R . . . Haemoproteins
RX . . . . Cytochromes
S . . . . Haemoglobins
TA . . . . . Haemoglobin-A
TC . . . . . Haemoglobin-C
TF . . . . . Haemoglobin-F, foetal haemoglobin
TL . . . . . Abnormal haemoglobins
TM . . . . . Methaemoglobin
U . . . . Myoglobin
V . . Flavoproteins

CUL Enzymes
* Proteins which catalyse reactions with a high degree of specificity and efficiency.
* Add to CUL letters A/GG following C; eg
. Reactions
* In enzyme activity; for actions assisted by enzymes, see CUP/CUT M.
BSF . . Induction (enzymes)
* See also Inductible enzymes CUP GBS FI
BSG . . . Reactivation
BSG AYG . . . . Reactivators
BSH . . Repression (enzymes)
BSI . . Inhibition (enzymes)
BSI AYG . . . Inhibitors (enzymes)
BSI AYH . . . . Allopurinol
BSI AYJ . . . . Uncoupling agents
BSL . . Irreversible reactions (enzymes)
BSM . . . Competitive inhibition
BSN . . . Non-competitive inhibition

Enzymes

Organic chemistry CO
Biologically significant organic compounds CTH
Proteins CUH
Enzymes CUL
Reactions
. . Non-competitive inhibition CUL BSN

Constituents in reaction
* Normal retroactive synthesis is interrupted here to allow insertion of special subsystems . The (Kinds of enzymes) facet would normally begin here, at CUL GH (see notes preceding COG I). Normal synthesis is resumed at CUP.

CUL GS . Substrate
H . Enzyme-substrate complex
HH . . Holoenzyme
I . . Apoenzyme
* Protein portion of enzyme.
J . . Co-factors
* Non-protein portion.
JGI BR . . . Inorganic ions
K . . . Prosthetic groups
* Non-amino substance necessary for the proper functioning of the protein portion.
L . . . Vitamin source (co-factors)
O . . Coenzymes
* Usually act as acceptors or receptors (taking up a chemical group from the substrate). When acting as donors (quasi-substrates) class as substrates.
. . . *Kinds of coenzymes*
OY . . . . Nicotinic acid derivatives
P . . . . . NAD, nicotinamide-adenine-dinucleotide, diphosphopyridine nucleotide, DPN
Q . . . . . NADP, nicotinamide-adenine-dinucleotide phosphate, triphosphopyridine dinucleotide, TPN
QY . . . . Flavin derivatives
RF . . . . . FAD, flavin-adenine-dinucleotide
RM . . . . . FMN, flavin mononucleotide
RP . . . . Pantothenic acid derivatives
RQ . . . . . Coenzyme A, CoA
S . . . . Ubiquinone, coenzyme Q
T . . . . Other coenzymes, A/Z
CUM . Proenzymes, precursors (proenzymes), zymogen
* Precursors of specific enzymes go with the enzyme.
K . . Kinases
* See also Transferases CUT F
CUO . Antienzymes
* Agents which selectively inhibit an enzyme's action.
T . Adaptive enzymes
CUP *Kinds of enzymes by general facets*
* Normal retroactive notation is resumed here after its interruption at CUL G.
* Add to CUP letters A/GG following C so far as applicable (ie, so far as they may specify a kind of enzyme); eg
GBS F . Inductible enzymes

Organic chemistry CO
Biologically significant organic compounds CTH
Proteins CUH
Enzymes CUL
Kinds of enzymes by general facets CUP
. Inductible enzymes CUP GBS F

Kinds of enzymes by other organic chemistry concepts
* So far as applicable; but very few are likely to act as specifiers.
* Add to CUP letters GI/PY following CO;
* Add to CUP PZ letters A/W following CP;
* Add to CUP letters Q/S following C.
Kinds of enzymes by substrate
* Add to CUQ letters N/Y following ECU L in Class E;
* Add to CUR letters G/Y following EC in Class E; eg
* For proteases, see CUS P.
CUQ P . NAD (donor in enzymes)

Kinds of enzymes by reaction catalyzed
* The order (but not the notation) is that of the reactions in CC/CD.
* Each kind of enzyme may be divided as follows (where the hyphen represents the classmark of the enzyme):
* Add to - letters A/GG following CUL;
* Add to - letters L/R following CU.
CUS C . Isoenzymes, isozymes, allozymes
* Any of the electrophoretically distinct forms of an enzyme.
D . Multi-enzyme complexes
F . Ligases, synthetases, synthases
* Catalyse the formation of covalent bonds using the energy released by cleavage of ADP or ATP.
FS . . Amino acyl tRNA synthetases
FT . . Peptide synthetases
FV . . Polynucleotide synthetases

H . Hydrolases
* Catalyse the hydrolytic cleavage of C-O, C-N and C-C (and some other) bonds. The recommended name is often formed by adding -ase to the substrate name.
HS . . Amidohydrolases, amidases
HT . . Aminohydrolases
I . . Esterases
IS . . . Carboxylicesterases
IT . . . . Cholinesterases
IV . . . . . Acetylcholinesterases
J . . . Phosphatases
JS . . . . Phospholipases
* Catalyse cleavage of phospatides.
JT . . . . Phosphomonoesterases
JV . . . . Phosphodiesterases
JX . . . Sulphatases
K . . Carbohydrases
L . . . Glycoside hydrolases
LS . . . . Amylases
M . . . . Cellulases, cytases
MS . . . . Disaccharidases
MT . . . . Lactase

Hydrolases

Biologically significant organic compounds CTH
Proteins CUH
Enzymes CUL
Hydrolases CUS H
Carbohydrases CUS K
. . Lactase CUS MT

CUS MV . . Maltase
N . . Sucrase, invertase
O . . Lipase
* Catalyzes hydrolysis of fats and breakdown of lipoproteins.
Q Peptide hydrolases, peptidases, proteases, proteinases
QS . Aminopeptidases
QT . Angiotensinase
QU . Carboxypeptidases
QV . Dipeptidases
R . Peptide peptidihydrolases
RS . . Bromelains, bromelins
RT . . Cathepsin
RV . . Chymotrypsin
RW . . Fibrinolysin
RX . . Kallikrein
S . . Papain
T . . Pepsin, pepsinogen
TS . . Renin
TT . . Rennin
U . . Thrombin
V . . Trypsin
VS . . Ovopepsin
W . Aminases
X . . Specific aminases, A/Z
XAS . . . Asparaginase
CUT B Oxidoreductases, oxidases, reductases, dehydrogenases
* Catalyse redox reactions; the substrate oxidized is the H donor.
* The order is that of substances in COl V/COP, but the notation is enumerative.
CH . Hydroxylases
CL . Alcohol oxidoreductases
CP . Peroxidases
CY . Aldehyde oxidoreductases
DK . Ketone oxidoreductases
DM . Amine oxidoreductases
DP . Amino acid oxidoreductases
EB . Oxygenases
EC . . Catalase
EG . . Glucose oxidase
EK . Xanthine oxidase
EN . NADH oxidoreductases, NADPH oxidoreductases
F Transferases
* Assist in transfer of substances (other than hydrogen) from one compound to another. The name of the group transferred is usually part of the recommended name.
. *Kinds of transferases by substrate*
GB . . Acyl tranferases
GD . . Aminotransferases
GF . . Hexosyltransferases

Organic chemistry CO
Biologically significant organic compounds CTH
Proteins CUH
. Enzymes CUL
. . . . Transferases CUT F
. . . . . Hexosyltransferases CUT GF

CUT GH . . . . . Methyltransferases
GJ . . . . . Pentosyltransferases
GL . . . . . Phosphotransferases
GN . . . . . ATP phosphotransferases
H . . . . Isomerases
* Group of enzymes catalysing intramolecular rearrangement.
. . . . . *Kinds of isomerases by substrate*
IC . . . . . Carbohydrate isomerases
IE . . . . . Glucose phophate isomerases
IG . . . . . Cis-trans isomerases
IJ . . . . . Tautomerases
IL . . . . . Epimerases
IN . . . . . Racemases
. . . . . *Kinds by further reactions*
JC . . . . . Intramolecular oxidoreductases
JE . . . . . Intramolecular transferases, mutases
L . . . . Lyases
* Cleave C-C, C-O, C-N and other bonds to leave double bonds, or to add groups to double bonds.
. . . . . *Kinds by substrate*
MC . . . . . Aldehyde lyases, aldolases
ME . . . . . Ammonia lyases
MG . . . . . Carboxy lyases
MH . . . . . Hydrolyases
MK . . . . . Keto-acid lyases
Q . Growth substances (non-hormone)
R . . Chalones
* Substances produced as part of growth-control system of tissues; thought to be protein in nature.

CVB Nucleosides & nucleotides
* Add to CVB as for CVC for literature dealing with the two classes together.
CVC . Nucleosides
* Consist of a pentose sugar linked with a heterocyclic compound, especially a pyrimidine or a purine. They are glycosides produced by the removal of the phosphate from a nucleotide.
* Add to CVC letters A/PY following CO;
* Add to CVC PZ letters A/W following CP;
* Add to CVC letters Q/U following C.
S . . Heterocycles
* These are cited before the pentose sugar and are therefore moved to CVD below.
. . *Kinds of nucleosides by constituent pentose*
* Add to CVC SY letter R following CT;
* Add to CVC T letters S/T following CT; eg
TS . . . Ribonucleosides
TT . . . Deoxyribonucleosides

Nucleotides

Organic chemistry CO
Biologically significant organic compounds CTH
Nucleosides & nucleotides CVB
Nucleosides CVC
Kinds of nucleosides by constituent pentose
. Deoxyribonucleosides CVC TT

CVD *Kinds by heterocycle*
* Add to CVD letters S/W following CS with the adjustment shown below:

V . Six-member heterocycles
VRP . . With nitrogen heteroatom
VRP RNS . . . With two nitrogens
* For Pyrimidine (CVD VRP RNS-RLQ BU) use CVD XB.
VRP RNU . . . With four nitrogens
* For Purine (CVD VRP-RNU RLR EU) use CVD YB.
VRS X . . With mixed heteroatoms
* For Cytosine (CVD VRT RLQ BXC) use CVD XC.
* For Thymine (CVD VRT RLQ BXD) use CVD XD.
* For Uracil (CVD VRT RLQ BXE) use CVD XE.
* For Guanine (CVD VRT RLQ BYL) use CVD YL.
XB . Pyrimidine nucleosides
XBT S . . With ribose
XBT T . . With deoxyribose
XC . . Cytosine nucleosides
XCT S . . . With cytosine & ribose
XCT SU . . . . Cytidine
XCT SV . . . . . Cytarabine, Ara-C
XD . . Thymine nucleosides
XDT TV . . . Thymidine
XE . . Uracil nucleosides
* Replaces thymine in RNA.
XET S . . . Uracil & ribose
XET SU . . . . Uridine
XET T . . . Uracil & deoxyribose
XET TU . . . . Deoxyuridine
YB . Purine nucleosides
YF . . Adenine nucleosides
YFT S . . . Adenine & ribose
YFT SU . . . . Adenosine
YL . . Guanine
YLT S . . . Guanine & ribose
YLT SU . . . . Guanosine, vernine

Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Nucleosides & nucleotides CVB
Nucleosides CVC
. . . . . Guanosine CVD YLT SU

CVF Nucleotides
* Esters of a nucleoside and a phosphate. Structural units of a nucleic acid (see CVH).

QQ . Cyclic nucleotides
QQB . . Monocyclic nucleotides
QQC . . Polynucleotides
QQE . . . Dinucleotides
. *Kinds by constituent pentose*
TS . . Ribonucleotides
TT . . Deoxyribonucleotides
CVG . *Kinds by heterocycle*
XB . . Pyrimidine nucleotides
XC . . . Cytosine nucleotides
XD . . . Thymine nucleotides
XE . . . Uracil nucleotides
YB . . Purine nucleotides
YF . . . Adenine nucleotides
* For adenine as a heterocyclic purine amine, see CSV QEN SC.
* For coenzymes, see CUL O.
YG . . . . Adenosine phosphates
YH . . . . . Adenosine monophosphate, AMP
YI . . . . . Adenosine diphosphate, ADP
YJ . . . . . Adenosine triphosphate, ATP
YL . . . Guanine nucleotides
CVH . Nucleic acids
* Polynucleotides with molecular weights of up to one billion and made of phosphate-linked base-bearing sugars. They are essential components of all living cells, carrying the information necessary to the construction of highly specific proteins.
* Add to CVH letters A/T following CVC; eg
. . Structure
AOX . . . Base sequence, genetic code
TS . . Ribonucleotides
* For ribonucleic acid, see CVI.
TT . . Deoxyribonucleotides
* For deoxyribonucleic acid, see CVK.
CVI . . RNA, ribonucleic acid
* Base constituents same as in DNA except that thymine is replaced by uracil (another pyrimidine).
. . . *Kinds by source*
CVJ B . . . . Ribosomal RNA, rRNA
D . . . . Viral RNA, vRNA
F . . . . Bacterial RNA
H . . . . Neoplasm RNA
. . . *Kinds by structure & function*
K . . . . Micro RNAs

Hormones

Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Nucleosides & nucleotides CVB
. . . RNA CVI
. . . . . Micro RNAs CVJ K

CVJ M . . . . . Messenger RNA, mRNA
MUD . . . . . Amino acids
MUD DGN . . . . . Codon
* A sequence of three bases coding a specific amino acid.
R . . . . . Transfer RNA, tRNA, soluble RNA
S . . . . . Anticodon
CVK . . . DNA, deoxyribonucleic acid
* Found in the cell nucleus and formed from nucleotides of two purines (adenosine and guanine) and two pyrimidines (cytosine and thymine).
. . . . Bonds
ANY . . . . . Alphahelix
. . . . *Kinds by source*
CVL B . . . . . Mitochondrial DNA
D . . . . . Viral DNA
F . . . . . Bacterial DNA
H . . . . . Neoplasm DNA
. . . . *Kinds by structure & function*
K . . . . . Alternate DNA structures
KU . . . . . A-DNA
KW . . . . . B-DNA
KY . . . . . Z-DNA
L . . . . . Circular DNA
N . . . . . Single-stranded DNA
P . . . . . Satellite DNA
Q . . . . . Multi-stranded DNA
S . . . . . Branched DBA

CVW Hormones
* Organic substances secreted in one part of an organism and transported to other parts which are then stimulated to some physiological action.
* May be steroids, peptides or relatively simple compounds (eg adrenaline) but are commonly defined in terms of their biological significance.
* To maintain consistency with Class H, letters W/X following HC are added to CV with some minor modifications and expansion.
* Add to CVW letters A/I following CO;
* Each hormone may be qualified as follows (where the hyphen represents its classmark):
* Add to - letters A/OY following CO;
* Add to -OZ letters A/W following COP;
* Add to -P letters P/U following C;
* Add to -R letters B/L following CV;
* Add to -S letters A/K following CVW; eg Auxins - Synthetic CVW KVD SKC.
BX . Precursors
* See also Proenzymes CUM

Chemistry C
Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Hormones CVW
Precursors CVW BX

Kinds of hormones by chemical composition
* Add to CVW J letters J/OY following CO;
* Add to CVW JOZ letters A/W following COP;
* Add to CVW J letters P/V following C.

CVW JON T . Amines
JTN . Steroids
JUF . Peptides
JUG JS . . Polypeptides
JUG K . . Oligopeptides
JUH . Proteins, protein hormones
JUK I . . Glycoprotein hormones
Kinds of hormones by origin
KC . Synthetic hormones
KD . Natural hormones, dessicated hormones
Kinds by special physiological reactions
KG . General action hormones
KH . Topical hormones, local hormones
KI . Releasing hormones
KJ . Anti-hormones, hormone antagonists
* Antagonize other hormones; eg anti-oestrogens.
KK . Metabolic hormones
* Acting on metabolism.
KL . . Anabolic hormones
KN . Regulatory hormones
* Acting on other glands.
KP . Morphological hormones
* Acting on other parts, organs or systems in the organism.
Kinds by position
KS . Ectopic hormones
* For ectohormones, see pheromones CVW KXB.

Kinds by source & action
KVB . Plant hormones, phytohormones
KVD . . Auxins
KVD SKC . . . Synthetic auxins
KVG . . . Heteroauxins
KVI . . . . Indole-3-acetic acid, IAP
KVK . . . . Non-indole natural auxins
KVM . . Gibberellins
KVN . . . Specific gibberellins, A/Z
KVQ . . Cytokinins, phytokinins
KVR . . . Kinetin
KVS . . . Zeatin
KVV . . . Other cytokinins, A/Z
KVX . Other plant growth substances, A/Z
KVX AB . . Abscisic acid, abscisin, dormine
KVX ET . . Ethylene chlorohydrin, chloroethanol, chlororethyl alcohol

Animal hormones

Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Hormones CVW
Other plant growth substances CVW KVX
. Ethylene chlorohydrin CVW KVX ET

CVW KW Animal hormones
* Assumed in most of the literature on hormones. For the general class of animal hormones, use CVW unless specifically restricted to animals (when locate here).

KWW . Pheromones, ectohormones
* Substances excreted into external environment and affecting the behaviour of other organisms (eg in territorial marking).

KWX . . Cyclic adenosine monophosphate, CAMP, cyclic adenylic acid, adenosine cyclic monophosphate, AMP

KWY . . Others, A/Z

KX . Vertebrate & human hormones
* These are classified by the glands which are their source, not the target. For the glands themselves, see E/G Biology.

KXW . *By glands as source*
* The hormones in this class are classified by the glsnds which are their source, not their target.
* Add to CVW letters L/Y following HCW;
* Add to CVX letters L/Y following HCX.

. . Pineal gland
* All the glands are now presented in this form: un-notated gland name, general class for its products, specific hormone(s).

L . . . Pineal hormones

LM . . . . Melatonin

. . Parotid gland

LP . . . Parotid gland hormones

LQ . . . . Parotin

. . Pituitary gland

M . . . Pituitary hormones

N . . . . Anterior pituitary hormones, adenohypophysis extracts

NSK C . . . . . Synthetic pituitary hormones

. . . . . Regulatory

NSK N . . . . . Tropic hormones in general

NU . . . . . Corticotropin, adrenocorticotropic hormone, ACTH, adrenotropin, adrenocorticotropic releasing factor, adrenodoxin, adrenotropic hormone
* Secretion of the adenohypophysis (in pituitary gland) which stimulates the adrenal cortex.

NUS KC . . . . . Cosyntropin

NW . . . . . Somatotropin, STN, growth hormone

NX . . . . . Thyrotropin, thyroid stimulating hormone, TSH, thyrotropic hormone

Biologically significant organic compounds CTH
Hormones CVW
Animal hormones CVW KW
Pituitary gland
. . Anterior pituitary hormones CVW N
. . . Thyrotropin CVW NX

CVW PH . . . Gonadotropins (pituitary), gonadotropic hormones (pituitary)
* A variety of peptide hormones produced mainly in the pituitary gland. For sex hormones produced in the gonads (mainly steroids) see CVX T.

PP . . . . Prolactin, lactotropin, lactogenic hormone, LTH, luteotropic hormone

PQ . . . . Follicle stimulating hormones, FSH

. . . . . Releasing factors

PQS KI . . . . . FSH-LH releasing factor

PQS KJ . . . . . Antagonists

PS . . . . Luteinising hormones, LH, interstitial cell-stimulating hormone, ICSH

PSS KI . . . . . Releasing factors
* For LH-FSH releasing factor, see CVW PWS KI.

PT . . . . Menotropins, human menopausal gonadotropin, HMG

. . Intermediate pituitary gland

QH . . . Intermediate pituitary gland hormones

QR . . . . Melanocyte stimulating hormone, MSH, intermedin

. . Posterior pituitary gland

RH . . . Posterior pituitary gland hormones, posterior neurohypophysis extracts

RS . . . . Oxytocin, pitocin

RT . . . . . Tocinoic acid

RV . . . . . Tocinamide

RX . . . . Pituitrin

SB . . . . Vasopressins

SD . . . . . Arginine vasopressin, antidiuretic hormone, ADH

SE . . . . . Deamino arginine vasopressin

SG . . . . . Lysin vasopressin, lypressin, LVP

SJ . . . . . Felypressin

SL . . . . Vasotocin

Thyroid gland

TH . Thyroid hormones
* For thyroid stimulating hormone, see CVW NX.

THS KJ . . Thyroid antagonists

TT . . Iodotyrosines

TU . . . Thyroxine

TV . . . Triiodothyronine

TW . . Thyrocalcitonin, calcitonin

TX . . Others, A/Z

TXT H . . . Thyronine

Parathyroid gland

V . Parathyroid hormone, parathormone, parathyrin

Animal hormones

Organic chemistry CO
Biologically significant organic compounds CTH
Hormones CVW
Animal hormones CVW KW
Parathyroid gland
. Parathyroid hormone CVW V

Thymus gland

CVW W . Thymus hormones

WW . . Thymopoietins

WX . . Thymosin

Adrenal gland

Y . Adrenal gland hormones

CVX A . . Adrenal cortex hormones, corticoids, corticosteroids, cortical hormones

* For adrenocorticotrophic hormone, see CVW NU.

LH . . . Glucocorticoids

LHS KF . . . . Topical, local

* For specific topical corticoids, see the chemical classes below.

LN . . . . Hydroxycorticosteroids

. . . . . Synthetic

LNS KD . . . . . Specific types, A/Z

LP 11-hydroxycorticosteroids

LR . . . . . Aldosterone

LT . . . . . Corticosterone

LV . . . . . Deoxycorticosterone

LW 18-hydroxydeoxycorticosterone

MB 18-hydroxycorticosterone

MD . . . . . Tetrahydracortisol

MF 17-hydroxycorticosteroids

MFS KC . . . . . Synthetic

MG . . . . . Cortisone

MH . . . . . Cortodoxone, cortexolone, 11-deoxycortisol

MJ . . . . . Hydrocortisone, cortisol

MK . . . . . Prednisolone

MKS KF . . . . . Topical prednisolone

ML . . . . . Triamcinolone

MN . . . . . Hydroxypregnenolone

MP . . . . . Tetrahydrocortisone

MR . . . . . Pregnenolones

* See also Progestins CVX XL

MT . . . . Ketosteroids, oxosteroids

* For androgens, see CVX U; for oestrogens, see CVX W.

MV . . . . Mineralocorticoids

* For hydroxycorticosteroids, see CVX LN.

. Adrenal medulla

N . . Adrenal medulla hormones

NX . . . Catecholamines

P . . . . Adrenalin, epinephrine

Q . . . . Noradrenalin, norepinephrine

Organic chemistry CO
Biologically significant organic compounds CTH
Hormones CVW
Animal hormones CVW KW
Adrenal gland
. . . . Noradrenalin CVX Q

Digestive system

CVX RK . Digestive system hormones

. . Salivary glands

RN . . . Saliva

RNV . . . . Ptyalin, salivary amylase

RP . . Gastrointestinal hormones

. . . Alimentary tract

RR . . . . Serotonin, 5-hydroxytryptamine

. . . Stomach mucosa

RT . . . . Gastrin

RTS KC . . . . . Pentagastrin

RV . . . . Gastrone

. . . Duodenal mucosa

RW . . . . Duodenal mucosa hormones, enterogastrones

RX . . . . . Secretin

SB . . . . . Cholecystokinin, pancreozymin

SF . . . . Enterocrinin

. . Pancreas

SG . . . Pancreatic hormones

SH . . . . Glucagon

SI . . . . Insulin

SJ . . . . . Globin zinc insulin

SK . . . . . Isophane insulin, neutral protamine Hagedorn, NPH

SL . . . . . Lente insulin

SM . . . . . Protamine zinc insulin

SN . . . . . Pro-insulin

SP . . . . . C-peptide (insulin)

Reproductive system

T . Sex hormones, sex steroids

TV . . Gonadotropins

* For pituitary gonadotropins, see CVW P; for placental hormones, see CVX YB.

U . . Androgens, male sex hormones, testoids

* See also Adrenal cortex hormones CVX A; Androstanes CTN TB

UW . . . Adrenosterone

VB . . . Androsterone

VC . . . . Epiandrosterone

VD . . . . . Dehydroepiandrosterone, DHEA

VE . . . Androstenedione

VH . . . Etiocholanolone

VJ . . . Testosterone

VK . . . . Epitestosterone

VM . . . Methyltestosterone

VQ . . . Other androgens, A/Z

VQO X . . . . Oxandrolone, oxandrin

VR . . . Testicular hormones

Vitamins

Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Hormones CVW
. . . . . Androgens CVX U
. . . . . Testicular hormones CVX VR

CVX W . . . . . Oestrogens, female sex hormones
WSK C . . . . . Synthetic
WSK D . . . . . Specific hormones, A/Z
WSK DD . . . . . Dienestrol
WX . . . . . Conjugated oestrogens
WY . . . . . Estradiol
XB . . . . . Coumestrol
XC . . . . . Equilenin
XD . . . . . Equilin
XE . . . . . Estriol
XF . . . . . Estetrol
XG . . . . . Estrone
XH . . . . . Zearalenone, mycotoxin
XJ . . . . . Other oestrogens, A/Z
XJN A . . . . . Nandrolone
XL . . . . . Corpus luteum hormones, progestins
XN . . . . . Progesterone
XP . . . . . Relaxin
XQ . . . . . Lututrin
XS . . . . . Progestational hormones
* For pregnenolone, see CVX MR.
XT . . . . . Pregnanediol
XV . . . . . Pregnanetriol
YB . . . . . Placental hormones
* For oestrogens, see CVX W; for progesterone, see see CVX XN.
YD . . . . . Chorionic gonadotropin, human chorionic gonadotropin, HCG
YE . . . . . Human menopausal gonadotropin, HMG, menotropin
YF . . . . . Placental lactogen

CWB Vitamins
* Substances other than proteins, carbohydrates, fats and mineral salts which, in relatively small quantities, are essential to the normal health of living organisms.
* Some of the substances included below can be made synthetically and are strictly vitamin-like rather than true vitamins.
* Add to CWB letters A/PY following CO;
* Add to CWB PZ letters A/W following CP
* Add to CWB Q letters Q/V following C.
BX . Precursors
BY . . Provitamins
. *Kinds of vitamins*
* Add to CWC letters K/X following HCV in Class H.
* Each type may be qualified as follows (where the hyphen represents the classmark of the vitamin):
* Add to - letters A/PY following CO;

Chemistry C
Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Vitamins CWB
Kinds of vitamins

* Add to -PZ letters A/W following CP;
* Add to - letters Q/V following C;
* Add to -W letters A/Y following CWC.
CWC K . Water soluble vitamins
* See also Coenzymes CUL O
L . . Vitamin B complex
M . . . Vitamin B1, thiamine
MX . . . . Thiamine pyrophosphate
N . . . Vitamin B2 complex, vitamin G, riboflavin
PC . . . Vitamin B3, nicotinic acid, niacin
PE . . . . Nicotinamide, niacinamide
PF . . . Vitamin B5, pantothenic acid
PG . . . Vitamin B6, pyridoxine
PH . . . Vitamin B7, biotin
PL . . . Choline (vitamins)
Q . . . Vitamin B9, vitamin B11, vitamin Bc, folic acid, folacin
RC . . . . Formyl tetrahydrofolate, tetrahydrofolate
RE . . . . . Citrovorum factor
RG . . . . Xanthopterin
* See also Pigments CWE
RJ . . . . Inositol, hexahydroxycyclohexane
RL . . . . Aminobenzoic acid vitamins
RM . . . . . Para-aminobenzoic acid vitamin, PAB
. . . Vitamin B11
* See Vitamin B9 CWC Q
S . . . Vitamin B12, cyanocobalamin, cobalamin, intrinsic factor (vitamin B12)
* See also intrinsic factor (glycoproteins) CUK NI.
TC . . . . Castle's intrinsic factor
TE . . . . Cobamides
TG . . . . Hydroxocobalamine
. . . Vitamin Bc
* See vitamin B9 CWC Q
TK . . . Vitamin Bt, carnitine
TL . . . Lipoic acid (vitamin), factor II
V . . Vitamin C, ascorbic acid
. . Vitamin G
* See CWC N
W . Fat soluble vitamins
XC . . Vitamin A, retinol
. . . Precursors
XCB X . . . . Carotenes (vitamin precursors), carotins
* See also pigments CWF KL
XE . . Vitamin D
XG . . . Vitamin D2, ergocalciferol, viosterol
XH . . . Ergosterol
XJ . . . Vitamin D3, cholecalciferol
XK . . . Dihydrotachysterol, synthetic Vitamin D, DHT
XL . . . Vitamin D4, dihydroergocalciferol

Natural pigments

Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Vitamins CWB
. . . Vitamin D CWC XE
. . . . Vitamin D4 CWC XL

CWC XLX . . . . Vitamin D5, sitocalciferol
XM . . . Vitamin E
XN . . . . Tocopherols
XNA . . . . . Alpha tocoperol
XNB . . . . . Beta tocopherol
XNC . . . . . Gamma tocopherol
XND . . . . . Delta tocopherol
XNT . . . . Tocotrienols
XNV . . . . . Alpha tocotrienols
XNW . . . . . Beta tocotrienols
XNX . . . . . Gamma tocotrienols
XNY . . . . . Delta tocotrienols
XP . . . Vitamin K
XQ . . . . Vitamin K1, phylloquinone, phytonadione
XR . . . . Vitamin K2, menaquinone

CWE Natural pigments
* Substances (many inorganic) used to impart colour to tissues and cells as factors in a variety of physiological functions (photochemical, hormonal, adaptive, protective, etc.). Distinguished from dyestuffs (which operate at the molecular level) by tending to be particulate and insoluble.
* The general class for pigments and dyes is in Class V Technology. Class here only chemical studies of those pigments produced by organisms (not synthetically) and serving a biological function.
* Add to CWE letters A/PY following CO;
* Add to CWE PZ letters A/W following CP;
* Add to CWE letters Q/S following C;
* Add to CWE letters T/V following C if applicable.

BX . Precursors (pigments)
. *Kinds of pigments*
* Each kind of pigment may be qualified as follows (where the hyphen represents its classmark):
* Add to - letters A/V following CWE.

CWF B . *Kinds of pigments by source & function*
F . . Plant pigments
G . . Animal pigments
GIV E . . . Retinal pigments

Chemical species CG
Organic chemistry CO
Biologically significant organic compounds CTH
Natural pigments CWE
Kinds of pigments by source & function CWF B
. . Retinal pigments CWF GIV E

CWF J *Kinds by substance*
* Add to CWF letters J/R following ECY in Class E (which is modified slightly at HCY in Class H).
* For Anthocyanine, see CTY P.

KE . Anthocyanidins
KEC . . Cyanidin
KEG . . Pelargonidin
KEO . . Delphinidin
KF . Anthocyanins
KFL . . Pelargonin
KFN . . Delphinin
KG . Anthoxathine
KJ . Lipochromes, chromolipids
KK . . Carotenoids
* For vitamin A, see CWC XC.
KL . . . Carotenes, carotins
KLX . . . . Lycopene
KM . . . . Beta carotenes
KN . . . . Xanthophylls
LB . . . . . Astaxanthin
LN . . . . . Lutein
LQ . Naphthoquinones
LRB . . Echinochrome
LRC . . Cochineal, carmine
LRE . . Anthraquinone
* For the general chemistry of anthraquinones, see CRR FQM K.
LS . Melanin
LX . Pyrrole pigments, tetrapyrroles
M . . Porphyrins, porphine
MX . . . Metalloporphyrins
N . . . . Chlorophyll
OB . . . . Haeme, heme, haematin, hematin
* See also Haemoproteins CUK R
OE . . . . Mesoporphyrin
OF . . . . Haematoporphyrin
OG . . . . Coproporphyrin
OT . . . . Cytochromes
PB . . . . Bilins, bile pigments
PQ . . . . . Bilirubin
PR . . . . . Biliverdin
PT . . . . . Urobilin
PTB X . . . . . Precursors
PTB Y . . . . . Urobilinogen
PW . . . Non-metallic porphyrins
PX . . . . Specific non-metallic porphyrins, A/Z
PXM E . . . . . Mesoporphyrins
PXP R . . . . . Protoporphyrin
PY . . Other pyrrole pigments, A/Z

Chemistry C
Chemical species CG
. . . Natural pigments CWE
. . . . . Pyrrole pigments CWF LX
. . . . . Other pyrrole pigments CWF PY

CWF QB . . . . . Flavonoids
QC . . . . . Flavan, phenylbenzopyran
QR . . . . . Flavones (pigments)
QS . . . . . Specific flavones, A/Z
QSF L . . . . . Flavins
* For riboflavin, see vitamin B complex CWC N.
QSQ U . . . . . Quercitin, quercetin
QT . . . . . Indigo pigments
QV . . . . . Pterins
QX . . . . . Adrenochrome
R . . . . . Others, A/Z
T . . . Toxins
* Poisonous substances of biological origin.
VEN . . . . Bacterial toxins
VF . . . . Phytotoxins, plant toxins
VG . . . . Mycotoxins
VH . . . . Zootoxins, animal toxins
CWH . . . Other complex organic compounds occurring naturally
CX Applied chemistry, chemistry-based technologies
* Alternative (not recommended) to locating in Class U/V. If this option is taken, proceed as follows:
* Add to CX the applicable letters following U.
* Add to CY the applicable letters following V.