EUROPEAN PATENT OFFICE
U.S. PATENT AND TRADEMARK OFFICE

CPC NOTICE OF CHANGES 1789

DATE: AUGUST 1, 2025

PROJECT MP10332

The following classification changes will be effected by this Notice of Changes:

Action	**Subclass**	**Group(s)**
SCHEME:		
Notes New:	B01J	39/00
	B01J	41/00
	B01J	43/00
	B01J	45/00
	B01J	47/00
	B01J	49/00
	B01J	2523/00
Notes Modified:	B01J	SUBCLASS
	B01J	23/002
	B01J	39/00 - 49/00
Guidance Headings Modified:	B01J	39/00
DEFINITIONS:		
Definitions New:	B01J	2523/00
Definitions Modified:	B01J	SUBCLASS
	B01J	23/002
	B01J	23/007
	B01J	31/00
	B01J	39/00
	B01J	41/00
	B01J	43/00
	B01J	45/00
	B01J	47/00
	B01J	49/00

No other subclasses/groups are impacted by this Notice of Changes.

This Notice of Changes includes the following *[Check the ones included]:*

1. CLASSIFICATION SCHEME CHANGES
   - ☐ A. New, Modified or Deleted Group(s)
   - ☐ B. New, Modified or Deleted Warning(s)
   - ☒ C. New, Modified or Deleted Note(s)
   - ☒ D. New, Modified or Deleted Guidance Heading(s)
2. DEFINITIONS
   - ☒ A. New or Modified Definitions (Full definition template)

☐ B. Modified or Deleted Definitions (Definitions Quick Fix)

3. ☐ REVISION CONCORDANCE LIST (RCL)
4. ☐ CHANGES TO THE CPC-TO-IPC CONCORDANCE LIST (CICL)
5. ☐ CHANGES TO THE CROSS-REFERENCE LIST (CRL)

CPC NOTICE OF CHANGES 1789

DATE: AUGUST 1, 2025

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1. CLASSIFICATION SCHEME CHANGES

C. New, Modified or Deleted Note(s)

SUBCLASS B01J - CHEMICAL OR PHYSICAL PROCESSES, e.g. CATALYSIS OR COLLOID CHEMISTRY; THEIR RELEVANT APPARATUS

Type*	Location	Old Note	New/Modified Note
M	B01J	1. In this subclass, the following terms or expressions are used with the meanings indicated : • "solid particles" includes such particles whether catalysts, reactants or inert in solid,semi-solid or pasty state; • "fluidised particles" means finely divided solid particles lifted and agitated by a stream of fluid; • "fluidised bed-technique" means fluid-solid contacting technique in which finely divided particles are lifted and agitated by a rising stream of fluid, said stream having such a speed as to form a lower dense phase (the "bed") and an upper dilute fluidised phase of "fluidised particles"; • "processes conducted in the presence of solid particles" does not include processes wherein the only solid particles present are formed during the reaction. 2. In this subclass, tradenames that are often found in scientific and patent literature have been used in order to define precisely the scope of the groups	1. In this subclass, the following terms or expressions are used with the meanings indicated: • "solid particles" includes such particles whether catalysts, reactants or inert in solid, semi-solid or pasty state; • "fluidised particles" means finely divided solid particles lifted and agitated by a stream of fluid; • "fluidised bed-technique" means fluid-solid contacting technique in which finely divided particles are lifted and agitated by a rising stream of fluid, said stream having such a speed as to form a lower dense phase (the "bed") and an upper dilute fluidised phase of "fluidised particles"; • "processes conducted in the presence of solid particles" does not include processes wherein the only solid particles present are formed during the reaction. 2. In this subclass, tradenames that are often found in scientific and patent literature have been used in order to define precisely the scope of the groups. 3. {In this subclass, combination sets (C-Sets) are used. Detailed information about C-Sets construction and the associated syntax rules is found in the definitions for B01J.}
M	B01J23/002	{In group B01J 23/002, elements constituting the exemplified mixed oxide are further indexed under the form of a	{In this group, C-Sets are used. Detailed information about C-Sets construction and the associated syntax rules is found in the

		C-set with B01J 2523/00 as base symbol using the relevant classification symbols of B01J 2523/10 - B01J 2523/847, in numerical order, as further symbols and separated by ",", e.g. the mixed oxide $Mo_aV_bTe_cO_x$ is classified as (B01J 2523/00, B01J 2523/55, B01J 2523/64, B01J 2523/68).}	Definitions of B01J.}
M	B01J39/00 - B01J49/00	1. In groups B01J 39/00 - B01J 49/00: • Ion-exchange covers all processes whereby ions are exchanged between the solid exchanger and the liquid to be treated and wherein the exchanger is not soluble in the liquid to be treated • Ion-exchange processes cover also ion-exchange in combination with complex or chelate forming reactions. 2. In groups B01J 39/00 - B01J 49/00, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place. 3. {In groups B01J 39/00 - B01J 49/00, it is desirable to classify other constituents by using Combination sets with symbols chosen from B01J 39/00 and subgroups and B01J 41/00 and subgroups.}	1. In groups B01J 39/00 - B01J 49/00: • Ion-exchange covers all processes whereby ions are exchanged between the solid exchanger and the liquid to be treated and wherein the exchanger is not soluble in the liquid to be treated • Ion-exchange processes cover also ion-exchange in combination with complex or chelate forming reactions. 2. In groups B01J 39/00 - B01J 49/00, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.
N	B01J 39/00		{In this group, C-Sets are used. Detailed information about C-Sets construction and the associated syntax rules is found in the Definitions of B01J.}
N	B01J41/00		{In this group, C-Sets are used. Detailed information about C-Sets construction and the associated syntax rules is found in the Definitions of B01J.}
N	B01J43/00		{In this group, C-Sets are used. Detailed information about C-Sets construction and

			the associated syntax rules is found in the Definitions of B01J.}
N	B01J45/00		{In this group, C-Sets are used. Detailed information about C-Sets construction and the associated syntax rules is found in the Definitions of B01J.}
N	B01J47/00		{In this group, C-Sets are used. Detailed information about C-Sets construction and the associated syntax rules is found in the Definitions of B01J.}
N	B01J49/00		{In this group, C-Sets are used. Detailed information about C-Sets construction and the associated syntax rules is found in the Definitions of B01J.}
N	B01J2523/00		In this group, C-Sets are used. Detailed information about C-Sets construction and the associated syntax rules is found in the Definitions of B01J.

*N = new note, M = modified note, D = deleted note

NOTE: The "Location" column only requires the symbol PRIOR to the location of the note. No further directions such as "before" or "after" are required.

D. New, Modified or Deleted Guidance Heading(s)

SUBCLASS B01J - CHEMICAL OR PHYSICAL PROCESSES, e.g. CATALYSIS OR COLLOID CHEMISTRY; THEIR RELEVANT APPARATUS

Type*	Location	Old Guidance Heading	New/Modified Guidance Heading
M	B01J39/00 - B01J49/00	**Ion-exchange** (treatment of milk A23C 9/14; separation by liquid ion-exchangers B01D, e.g. B01D 11/00; separation of isotopes B01D 59/00; compounds per se, see the relevant classes, e.g. C01, C07, C08; treatment of water C02F 1/42; refining of hydrocarbon oils, in the absence of hydrogen, with solid sorbents C10G 25/00; purification of sugar juices C13B 20/14; extraction of sugar from molasses C13B 35/06; extraction of metal compounds from ores or concentrates by wet processes C22B 3/00; using ion-exchange for investigating or analysing materials G01N 30/96; treating radioactively contaminated material G21F 9/12)	**Ion-exchange**

*N = new guidance heading, M =modified guidance heading, D = deleted guidance heading

NOTES:

- The "Location" column requires the symbol AFTER the guidance heading location. No further directions such as "before" or "after" are required.
- In cases where there may be confusion as to whether a new group falls within the scope of a guidance heading, indicate the guidance heading and whether the group does or does not go with the guidance heading. This can be included in the "Location" column. For example, the guidance heading "Compounds containing carbon together with sulfur, selenium or tellurium with or without hydrogen, halogens, oxygen or nitrogen" encompasses groups C07C 301/00-395/00 only. If a new group C07C 398/00 is proposed and is included in the guidance heading scope, indicate this in the "Location" column as follows: 398/00 to be included under the guidance heading: "Compounds containing carbon together with sulfur, selenium or tellurium with or without hydrogen, halogens, oxygen or nitrogen."

2. A. DEFINITIONS (new)

B01J 2523/00

Definition statement

This place covers:

Chemical elements of heterogeneous catalysts.

Special rules of classification

C-Sets classifications:

In this group, C-Sets (e.g. #B1Ja) are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the “Special rules of classification” in B01J 23/002.

2. A. DEFINITIONS (modified)

B01J

Definition statement

Replace: The Definition statement text with the revised text below.

Granulation processes or devices, e.g. by dividing liquid material into drops in drums or in fluidised beds or by expressing the material through sieves, making particulate materials hydrophobic.

Chemical or physical processes or apparatus therefor concerning:

- chemical or physical change of matter by the use of pressure;
- feed or outlet regulating devices;
- calcining, fusing;
- apparatus for generating gases;
- solidifying liquids;
- direct application of electric or wave energy;
- production of inert gas mixtures;
- stationary, nozzle-type reactors.

Chemical processes involving a gas, e.g. gas passing through fixed beds or fluidised beds, reacting liquid with gaseous media other than in the presence of solid particles, reacting gaseous media with gaseous media or reacting gaseous media with non-particulate solids.

Chemical processes involving a liquid, e.g. liquids passing through fixed beds or fluidised beds, reacting liquid with gaseous media, reacting liquid with liquids or reacting liquids with non-particulate solids.

Production of colloidal materials or their solutions, e.g. making microcapsules by physical drying, spraying, coacervation or polymerisation.

Sorbent or filter aid compositions comprising inorganic or organic material, sorbents specially adapted for chromatography and processes for preparing or regenerating thereof.

Catalysts:

- catalysts containing elements or inorganic compounds, e.g. magnesium, silica, copper, noble metals, sulfides, halides or carbides;
- Raney catalysts, e.g. Raney nickel;
- catalysts comprising molecular sieves, e.g. silicalites, crystalline zeolites, clays or phosphates;
- catalysts comprising metal hydrides, organic compounds or coordination complexes;
- catalysts characterised by their form or physical properties;

- preparation processes, protection or activation, e.g. impregnation, coating, reducing;
- regeneration or reactivation of catalysts.

Ion exchange processes, e.g. cation, anion or amphoteric ion-exchange; regeneration of ion-exchangers and apparatus therefor.

Relationships with other classification places

Replace: The Relationships section text with the revised text below.

Polymerisation subclasses C08F and C08G: Apparatus used for polymerisation processes should be classified in subclass B01J since the polymer subclasses usually cover aspects of process and not of the apparatus used.

Reforming/hydrogen production subclass C01B: Apparatus used for reforming reactions (production of hydrogen for fuel cell applications) should be classified in subclass B01J (mainly in group B01J8/00 since very often a catalytic bed is used for catalytic reforming). Subclass C01B covers mainly the process aspects of the reforming and subclass B01J the aspects relating to the types of apparatus used.

Molecular sieves per se are classified in subclass C01B.

Water treatment subclass C02F: if the claims of a patent document classified in subclass C02F do not specify which kind of fluid is treated, the document should be classified in groups B01J3/00-B01J12/00 and B01J14/00-B01J19/00, especially regarding apparatus features (UV radiation means, baffles).

Separation, e.g. distillation, also combined with a chemical reaction, is classified in subclass B01D.

Electrocatalysts used in processes or means for the direct conversion of chemical energy into electrical energy are classified in subclass H01M.

Electrocatalysts used in electrolytic or electrophoretic processes for the production of compounds or non-metals and apparatus therefor are classified in subclass C25B.

The uses of the catalysts are further classified in subclasses B01D, C01B, C01C, C10J, C07B, C07C, C07D, C10G, C10K, C11B and C11C, as appropriate.

References

Application-oriented references

Replace: The Application-oriented table with the revised table below.

Separation of liquids by cation-exchange adsorbents	B01J39/00
Separation of liquids by anion-exchange adsorbents	B01J41/00
Treatment of milk	A23C9/14
Separation by ion-exchangers	B01D
Chromatography involving ion-exchange	B01D15/36
Separation of isotopes	B01D59/00
Treatment of water by ion exchange	C02F1/42
Refining of hydrocarbon oils, in the absence of hydrogen, with solid sorbents	C10G25/00
Purification of sugar juices	C13B20/14
Extraction of sugar from molasses	C13B35/06
Extraction of metal compounds from ores or concentrates by wet processes	C22B3/00
Combustion apparatus in which combustion takes place in a fluidised bed of fuel or other particles	F23C10/00
Drying solid materials to form a fluidised bed	F26B3/08
Using ion-exchange for investigating or analysing materials	G01N30/96
Treating radioactively contaminated material	G21F9/12

Informative references

Replace: The Informative references table with the revised table below.

Apparatus or devices for combinatorial chemistry or for making molecular arrays	B01J19/0046
Solid sorbent compositions	B01J20/00
Disinfection, sterilisation or deodorisation of air	A61L
Preparations for medical, dental or toiletry purposes	A61K
Treating hazardous wastes	A62D
Distillation or related exchange processes in which liquids are contacted with gaseous media, e.g. stripping	B01D3/00
Crystallisation	B01D9/00
Filtering material for liquid or gaseous fluids	B01D39/00
Separation of gases or vapours; Recovering vapours of volatile solvents from gases; Chemical or biological purification of waste gases, e.g. engine exhaust gases, smoke, fumes, flue gases, aerosols	B01D53/00
Catalytic processes for purification of waste gases	B01D53/86
Purification of engine exhaust gases by catalytic processes	B01D53/94
Apparatus in general for separation processes using semi-permeable membranes	B01D63/00
Mixing	B01F23/00 - B01F35/00
Laboratory equipment	B01L
Lab-on-a-chip	B01L3/00
Cyclones per se	B04C
Ultrasonic devices per se	B06B3/00

Cleaning reactors	B08B
Waste incineration	B09B
Treating soils	B09C1/00
Presses	B30B
Control when application is electrically driven vehicles	B60L
Storage containers, bags	B65B
Making microstructures	B81B
Hydrogen production	C01B3/00
Process for preparing hydrogen using catalysts	C01B3/38
Carbon/nanocarbon	C01B32/00
Ammonia production	C01C1/00
Water treatment	C02F
General methods of organic chemistry	C07B
Process for preparing acyclic or carbocyclic compounds	C07C
Preparation of hydrocarbons, such as ethylene and propylene, from one or more compounds, none of them being a hydrocarbon, starting from organic compounds containing only oxygen atoms as heteroatoms, such as methanol	C07C1/20
Preparation of compounds having hydroxy or O-metal groups bound to a carbon atom not belonging to a six-membered aromatic ring by reduction of an oxygen containing functional group	C07C29/132
Preparation of compounds having hydroxy or O-metal groups bound to a carbon atom not belonging to a six-membered aromatic ring, such	C07C29/153

as ethanol by reduction of oxides of carbon exclusively characterised by the catalyst used	
Preparation of compounds having >C = O groups bound only to carbon or hydrogen atoms, such as (meth)acrolein, by oxidation of unsaturated hydrocarbons	C07C45/35
Preparation of carboxylic acid nitriles by ammoxidation of hydrocarbons or substituted hydrocarbons	C07C253/24
Process for preparing heterocyclic compounds	C07D
Preparation of oxiranes, such as ethylene oxide or propylene oxide, by oxidation	C07D301/00
Macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds	C08F
Macromolecular compounds obtained otherwise than by reactions only involving unsaturated carbon-to-carbon bonds	C08G
Coke oven, pyrolysis	C10B
Fluid catalytic cracking [FCC], Fischer-Tropsch process	C10G
Production of liquid hydrocarbon mixtures from carbon monoxide with hydrogen with the use of catalysts	C10G2/30
Catalytic cracking of hydrocarbon oils	C10G11/00
Catalytic reforming naphtha	C10G35/04
Refining of hydrocarbon oils using hydrogen or hydrogen-generating compounds	C10G45/00
Hydro-cracking hydrocarbon oils	C10G47/00
Hydro-processing hydrocarbon oils	C10G49/00
Gasification	C10J

Bioreactors	C12M
Chemical vapor deposition processes	C23C16/00
Electrolytic processes	C25B, C25C
Single crystal growth	C30B
Combinatorial chemistry	C40B
Exhaust gas treatment for NOx	F01N3/00
Pumps	F04B13/00
Valves	F16J
High pressure vessels in general	F16J13/00
Combustion apparatus or processes	F23
Apparatus for treating combustion-air, fuel or fuel-air mixtures by catalysts	F02M27/02
Air-conditioning systems	F24F3/00
Drying solids	F26B
Heat exchange apparatus having stationary plate-like or laminated conduit assemblies	F28D9/00
Plate-like or laminated elements of heat exchange apparatus	F28F3/00
Analysis	G01N
Control for other applications	G05B13/00
Surface treatment of semi-conductors	H01L21/00
Primary batteries	H01M6/00
Fuel cells	H01M8/00
Microwave devices, UV devices	H05B6/80
Electrostatic charges (removing of)	H05F3/04

Plasma reactors per se	H05H1/00

Special rules of classification

Replace: The existing Special rules text with the revised text below.

In group B01J20/00 and in each set of groups B01J21/00 - B01J31/00 and B01J39/00 - B01J49/00, in the absence of an indication to the contrary, classification is made in the last appropriate place.

Pure compounds or elements, or their recovery from solid sorbent compositions, filter aid compositions or catalysts, are classified in the appropriate subclass for chemical compounds or elements. However, when it is explicitly stated that the pure compound or element, in a particular form, is especially useful as a solid sorbent, filter aid or catalyst, it is further classified in groups B01J20/00, B01J21/00 - B01J31/00 or B01J35/00.

Metal catalysts or metal oxide catalysts activated or conditioned by halogens, sulfur or phosphorous, or compounds thereof are classified in the appropriate groups for metal catalysts or metal oxide catalysts.

When classifying in groups B01J33/00 - B01J38/00, any part of a catalyst that is not covered by B01J33/00 - B01J38/00 and that itself is determined to be novel and non-obvious must also be classified in groups B01J21/00 - B01J31/00. Such a part of a catalyst can be either a single substance or a composition in itself.

In groups B01J39/00 - B01J49/00, ion-exchange covers all processes whereby ions are exchanged between the solid exchanger and the liquid to be treated and wherein the exchanger is not soluble in the liquid to be treated. Ion-exchange processes also cover ion-exchange in combination with complex or chelate forming reactions.

In groups B01J 39/00 - B01J 49/00, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the last appropriate place.

The most important aspect of groups B01J3/00 - B01J12/00 and groups B01J14/00 - B01J19/00 (except group B01J19/0046) is the fact that they cover general chemical and/or physical processes or apparatus used in chemistry and/or physico-chemistry, mainly on industrial scale, except microreactors group B01J19/0093. B01J19/0093 focuses on the devices, which are reactors (technical characteristics thereof, as well as equipment in cooperation therewith). In this context, devices for specific applications are normally (unless some agreements are provided between technical fields) to be classified in these more specific application fields, especially where these fields foresee groups for devices (for example devices for combustion, pyrolysis, gasification,

manufacturing of semi-conductors) and not in groups B01J3/00 - B01J19/00. Consequently, processes or apparatus for specific applications should be at a first stage classified in the relevant specific classes for these processes or apparatus. If specific aspects of these processes or apparatus could be generalized and could then be of interest for search purposes, B01J groups can also be used at a second stage for classification of these processes or apparatus.

Thus, specific technical fields should not be mixed with subclass B01J, unless agreements exist between fields (e.g. hydrogen production).

Whole documents should be classified, not only the claims of a patent, but also the content of the description and of the drawings.

Orthogonal indexing codes B01J2203/00, B01J2208/00 and B01J2219/00 are used to classify additional information not covered by the main trunk. In some cases, orthogonal indexing codes are mainly used as subdivisions of a specific group (for example the microreactors or the plate-type reactors), whereas in other cases the orthogonal indexing codes are used for several groups (typical example are the orthogonal indexing codes relating to heat exchange aspects).

A material is classified as catalyst when:

- the application states that it is useful as catalyst (or catalyst support), and
- when details regarding its composition, properties, preparation or regeneration are disclosed.

Aspects of the catalyst to be classified:

- composition of the catalyst (groups B01J21/00, B01J23/00, B01J25/00, B01J27/00 and B01J29/00);
- if applicable: protection of catalysts (group B01J33/00);
- physical-chemical properties of the catalyst (group B01J35/00);
- preparation of the catalyst (group B01J37/00);
- regeneration of the catalyst (groups B01J38/00, B01J21/20, B01J23/90, B01J25/04, and B01J27/28, B01J29/90);
- catalysts only used as electrocatalysts are not classified in subclass B01J, but in subclasses H01M or C25B.

Catalysts comprising organic compounds, metal hydrides, organometallic compounds and coordination complexes are classified in group B01J31/00.

Pure compounds or elements are classified in the appropriate subclass for chemical compounds or elements.

However, when it is explicitly stated or claimed that the pure compound, element or zeolite in a particular form is especially useful as a catalyst, it is additionally classified in groups B01J21/00 - B01J29/90 or B01J33/00 - B01J35/00.

Which parts of the application/patent to classify for catalysts:

Each specifically disclosed embodiment, in particular each example, giving details regarding composition, properties, preparation or regeneration of the catalyst (or catalyst support) is classified, even if the application/patent does not claim a catalyst per se. In case of claims relating to a catalyst, if classification of the examples only does not suitably reflect the subject matter of the claims, additional, general groups are given to cover the scope of the catalyst claims.

"Last place rule":

In each set of groups B01J21/00 - B01J33/00, in the absence of an indication to the contrary, classification is made in the last appropriate place ("last place rule").

The last place rule for classifying the composition of the catalyst is:

Does catalyst contain any organic compounds, metal hydrides, organometallic compounds or coordination complexes? If yes, use group in right column. If no, continue down.	B01J 31/00
Any molecular sieves (e.g. zeolites) present? If yes, use group in right column. If no, continue down.	B01J 29/00
S, Te, Se, P or nitrogen present or are halogens present? (Excluding activators). If yes, use group in right column. If no, continue down.	B01J 27/00
Are any Raney catalysts present? If yes, use group in right column. If no, continue down.	B01J 25/00
Are components other than Mg, B, Al, C, Si, Ti, Zr or Hf present? If yes, use group in right column. If no, continue down.	B01J 23/00
If all of the above answers are no, then use the group in the right column.	B01J 21/00

The last place rule within B01J 23/00 is:

Is an iron group metal or is copper in combination with a noble metal present? If yes, use group in right column. If no, continue down.	B01J 23/89

Is an iron group metal or copper present? If yes, use groups in right column. If no, continue down.	B01J 23/70 - B01J 23/88
Is there a noble metal in combination with a metal of groups B01J 23/02 - B01J 23/36? If yes, use groups in right column. If no, continue down.	B01J 23/54 - B01J 23/68
If all of the above answers are no, then use the groups in the right column.	B01J 23/02 - B01J 23/52

Example: $MoVSbO_x$ is classified in group B01J 23/28 as molybdenum is the last group.

Example: $MoVSbFeO_x$ is classified in group B01J 23/8877 as iron combined with molybdenum, further containing vanadium is the last group.

In addition to the appropriate symbol according to the "last place rule", mixed oxides are classified in group B01J23/002, spinels are classified in groups B01J23/005 or B01J25/00 and mixed salts (e.g. hydrotalcite) are classified in group B01J23/007.

In addition, mixed oxides (including spinels) containing three or more elements other than oxygen, are classified using C-Sets. This C-Sets classification only applies to the specific mixed oxides of the working examples.

Catalysts composed of separately prepared, distinguishable parts having different compositions are classified in group B01J35/19. The appropriate group for the catalyst composition as a whole is given. In addition, each part is classified as a separate catalyst. Exception: Mixtures of molecular sieves are classified in groups B01J29/005 or B01J29/80 and the individual constituents of these mixtures are classified with symbols chosen from groups B01J29/03 - B01J29/046 as additional information.

Example: Admixture of zeolite ZSM-5 and Pt/Al_2O_3; is classified in groups B01J35/19, B01J29/44, B01J29/40 and B01J23/42.

Example: Zeolite ZSM-5 shaped with Al_2O_3 as matrix, and then impregnated with Pt is classified in groups B01J29/44 and B01J2229/20.

Example: Zeolite ZSM-5 mixed with Pt-impregnated Zeolite Y, is classified in groups B01J29/80, B01J29/40, B01J29/126 and B01J2229/18.

How to classify supported catalysts:

The carrier is normally not classified, unless the inventive idea is linked to the nature of the support. In this case, the support per se is also classified, usually in group B01J21/00, if appropriate. A symbol is given as additional information.

Metal catalysts or metal oxide catalysts activated or conditioned by halogens, sulfur or phosphorus, or compounds thereof are classified in the appropriate

groups for metal or metal oxide catalysts (group B01J23/00) and in the groups relevant for activation or conditioning (group B01J37/00).

Heteropolyacids are classified in group B01J27/188 and subgroups.

If metals are introduced into the framework of the molecular sieve already in the synthesis stage, then classification is done in groups B01J29/86 - B01J29/89 and B01J29/046 - B01J29/048.

Combination sets (C-Sets) classification:

In this subclass, C-Sets classification is applied to the following groups, listed in the table below, if the document discloses a pertinent combination of technical features that cannot be covered by the allocation of a single symbol. The fourth column of the table indicates the place where the detailed information about the C-Sets construction and the associated syntax rules can be found, in the definition section “Special rules of classification”.

C-SETS ID	BASE SYMBOL	SUBSEQUENT SYMBOLS	C-SETS FORMULA; LOCATION OF C-SETS RULES
#B1Ja	B01J 23/002	B01J 2523/00 - B01J 2523/847	(B01J 23/002, B01J 2523/00 - B01J 2523/847); catalyst comprising mixed oxides; see B01J 23/002
#B1Jb	B01J 39/00 - B01J 49/90	B01J 39/00 - B01J 49/90	(B01J 39/00 - B01J 49/90, B01J 39/00 - B01J 49/90); compositions, apparatus or processes having at least two types of ion exchangers; see B01J 39/00

The specific C-Sets rule is located at only one place of the base symbol in the section “Special rules of classification” in the definition. If the C-Sets rule is applicable to all groups of a subclass, it is located at the subclass level only. If the same C-Sets rule is applicable to multiple groups or subgroups within the same subclass, the C-Sets rule is placed at the highest group or subgroup of the multiple groups.

Glossary of terms

Replace: The Glossary of terms table with the revised table below.

catalyst	any substance that increases the rate of a reaction without itself being consumed. Catalysts are commonly used in their pure form or in combination with suitable carriers. It covers also a carrier forming part of the catalyst.
chromatography	a process in which a fluid is caused to flow along a linear path comprising a sorbent, with which the fluid competes in affinity for a constituent of the fluid. The constituent is sorbed from the moving fluid by the relatively immobile sorbent and re-dissolved by a later passing portion of the fluid until an equilibrium of the sorbing-dissolving step is set up causing the constituent to concentrate in a specific volume of the sorbent and to move along the path of the fluid at a rate slower than such fluid.
fluidised particle	finely divided solid particle lifted and agitated by a stream of fluid
fluidised-bed	fluidised-solid contacting technique in which finely divided particles are lifted and agitated by a rising stream of fluid
molecular sieve	material (e.g. zeolitic, mesoporous) having cavities and channels which by their size allow some molecules to pass through, but prevent others
solid particle	particle whether catalysts, reactant or inert in solid, semi-solid or pasty state
sorbent	a material which separates a constituent from a fluid mixture containing such constituent by sorption. The action in most instances is that of selective retention (i.e. the sorbent removes only the part of the fluid mixture for which it has the greatest affinity).
zeolites	crystalline aluminosilicates with base-exchange and molecular sieve properties, having three-dimensional, microporous lattice framework structure of tetrahedral oxide units; compounds isomorphous to those of the former category, wherein the aluminium or silicon atoms in the framework are partly or wholly replaced by atoms of other elements, e.g. by gallium, germanium, phosphorus or boron

B01J 23/002

Special rules of classification

Replace: The Special rules text with the revised text below.

Classification of catalysts follows Special rules of classification described in B01J.

Combination sets (C-Sets):

C-Sets statement: #B1Ja

- In group B01J 23/002 the compositions of, mixed oxides containing three or more elements excluding oxygen are classified in the form of C-Sets.
- In #B1Ja, the base symbol, representing the constitutive chemical elements of heterogenous catalysts is B01J 23/002, whereas the subsequent symbols representing the chemical elements are taken from the groups B01J 2523/00 - B01J 2523/847.

C-Sets syntax rules:

- Each of these C-Sets should contain three or more symbols.
- The order of the subsequent B01J 2523/00 - B01J 2523/847 symbols in C-Set is numerical.
- C-Sets classifications based on #B1Ja are allocated as additional information (Add).

C-Sets examples:

- #B1Ja: A catalyst comprising $Mo_aV_bTe_cO_x$ is classified as (B01J 23/002, B01J 2523/55, B01J 2523/64, B01J 2523/68).
- #B1Ja: A catalyst comprising zinc doped manganese-iron spinel mixed oxide comprises $Zn_xMn_{0.5}Fe_{2.5-x}O_4$, wherein $0<x\leq0.9$, is classified as (B01J 23/002, B01J 2523/27, B01J 2523/72, B01J 2523/842).
- #B1Ja: A catalyst comprising a solid support coated with a calcined mixed metal oxide hydrotalcite-like compound, wherein said calcined mixed

metal oxide hydrotalcite-like compound is $Co_6Ce_{0.8}Al_{1.2}O_9$, is classified as (B01J23/002, B01J 2523/31, B01J 2523/3712, B01J 2523/845).

B01J 23/007

Special rules of classification

Replace: The Special rules text with the revised text below.

Hydrotalcites or at least two different metal oxides forming a solid solution obtained as intermediate, later converted to other structures, may be classified by using an orthogonal indexing code.

Synonyms and Keywords

Insert: A space after "'anionic clay'," so that the text appears as below.

- "hydrotalcite", "anionic clay", "HT" and "HTc"

B01J 31/00

Definition statement

Replace: The Definition statement text with the revised text below.

The meaning of the term "catalyst" within this group encompasses catalyst systems, i.e. additives essential to the catalytic function of such systems are also included in this group, e.g. co-catalysts, specific reagents, solvents or solvent mixtures.

Relationships with other classification places

Replace: The Relationships text with the revised text below.

A material is classified as catalyst when the application states that it is useful as catalyst (or catalyst support) and when details regarding its composition, properties, preparation or regeneration are disclosed.

Double metal cyanide [DMC] catalysts are classified in group B01J27/26.

Compounds per se are classified in subclasses C07C - C07F. This compound classification is also (additionally) applied in cases where multiple possible uses from distinct chemical fields are disclosed in the application, e.g. as catalysts, sorbents or medicinal agents.

Electrocatalysts used in processes or means for the direct conversion of chemical energy into electrical energy are classified in subclass H01M.

Electrocatalysts used in electrolytic or electrophoretic processes for the production of compounds or non-metals and apparatus therefor are classified in subclass C25B.

In contrast to the apparatuses used for the polymerisation processes of subclasses C08F and C08G, the relevant polymerisation catalysts should not be classified in subclass B01J, in particular not in group B01J31/00, since these, as well as further polymerisation process features are covered in the polymer subclasses of C08.Group B01J31/00 may however be allocated as additional information to provide further information of potential interest for search purposes.

Multiple classification

The intended use of the catalysts of this group is preferably classified as well, e.g. in a group of subclasses C07B - C07D.

Separately claimed ligands of metal complexes should be classified in a group of subclasses C07C - C07F.

Any part of a catalyst which is not identified by the classification according to the point above, and which is considered to represent information of interest for search, may also be classified with symbols in B01J 31/00 as additional information. This can, for example, be the case when it is considered of interest to enable searching of catalysts using a combination of classification symbols.

References

Application-oriented references

Replace: The Application-oriented table with the revised table below.

Catalytic processes for purification of waste gases	B01D53/86
Purification of engine exhaust gases by catalytic processes	B01D 53/94

Catalyst compositions used only in polymerisation reactions	C08F4/00
Metal complexes in liquid carbonaceous fuels	C10L1/30
Metal complexes as bleach catalysts in detergent compositions	C11D3/168
Catalytic antibodies	C12N9/0002
Electrocatalysts	H01M

Informative references

Replace: The Informative references table with the revised table below.

Catalysts comprising inorganic constituents or molecular sieves	B01J21/00 - B01J29/00
Catalysts comprising inorganic carbon compounds	B01J27/20 - B01J27/26
Protection of catalysts, e.g. of Raney catalysts	B01J33/00
Catalysts characterised by their form or physical properties	B01J35/00
General processes for catalyst preparation or activation, e.g. impregnation, coating, reducing	B01J37/00
General processes for catalyst regeneration or reactivation	B01J38/00
Separation of liquids by cation-exchange adsorbents	B01J39/00
Separation of liquids by anion-exchange adsorbents	B01J41/00
General methods of organic chemistry	C07B
C-C cross-coupling reactions	C07B37/04
Acyclic or alicyclic organic compounds per se, their preparation	C07C
Hydroformylation (oxo-reaction)	C07C45/50

Preparation of metal complexes, including MOFs, containing carboxylic acid moieties	C07C51/418
Heterocyclic organic compounds per se, their preparation	C07D
Epoxidation (preparation of oxiranes)	C07D301/00
Organic non-metal and metal compounds per se, including organometallic compounds and complexes, of groups 1-18 of the periodic table	C07F
Metal-organic frameworks [MOFs]	C07F19/005
Metal complexes as synthetic dyes	C09B57/00

Special rules of classification

Replace: The Special rules text with the revised text below.

In this group, in the absence of an indication to the contrary, classification is made in the last appropriate place.

The distinction between "compound" and "coordination complex" is made according to the definitions in the glossary below. In borderline cases (higher hierarchy) ligands of metal complexes can also be classified as compounds per se as additional information, with the complex of lower hierarchy being classified as invention information, or vice versa.

For example, in case of doubt, a probable coordination complex having two oxygen atoms present at least in one of the bidentate or bridging ligands is classified as invention information in group B01J 31/223 and the compound per se (oxygen containing compounds with a metal oxygen link) may be classified as additional information in group B01J 31/0211. This situation may be found in the following case: titanium hydrocarbyl oxide compounds $(Ti(OR)_4$, group B01J 31/0211) vs valence expanded titanate complexes having added anionic ligands, e.g. Cl^- or RO^- or $RC(=O)O^-$ group B01J 31/223, the status of these further compounds present in the reaction mixture being unclear based on limited information in the document to be classified. Therefore, the last place rule is not fully applied for coordination complexes with ligands being classified as invention information and complexes as additional information.

The wording in the application should also be considered. Thus, in absence of exact identification of substances by name, formula or registry number, if

reference is made exclusively to "complexes" and this designation appears correct on the basis of probability, the catalyst in question should be classified as coordination complex.

In this group, if two or more aspects are of equal importance, these are each classified, e.g. two components in a catalyst system such as:

- support and pendant or otherwise immobilised coordination complex;
- MOF and all linking ligands;
- coordination complex and essential additive; or
- coordination complex and further catalytically active metal components, e.g. nanoparticles.

However, if two components, even if separately added, are described as forming, or known to form, a coordination complex, only the latter is classified, e.g. phosphine and Group 8-10 metal such as rhodium. The groups B01J31/26 - B01J31/38 are not to be used for the central metals in coordination complexes, but rather for separately added further inorganic ingredients.

Likewise, the catalyst (system) and its regeneration method (see groups B01J31/40), if defined in sufficient detail, would both be classified.

The further catalyst groups of subclass B01J, i.e. B01J21/00 - B01J38/00, can be used to classify such further aspects of materials and processes to be used, if not provided in sufficient detail in group B01J31/00, e.g. when a specially prepared inorganic support or a support with specific physical parameters or a special form is concerned. Further guidance in this respect is given in the classification rules for groups B01J21/00 - B01J29/00 and B01J33/00 - B01J38/00.

Each specifically disclosed alternative is separately classified, i.e. specifically disclosed by way of worked examples, specific claims and/or explicit alternatives therein. This applies even if the application does not claim a catalyst per se.

In the case of compounds of this group, and in analogy to the guidance given in subclass C07C (cf. respective classification rules), this means either real examples of claimed compounds, i.e. those which are prepared or for which physical data, preparation or regeneration details are given, and compounds which are individually named or drawn in the claims.

Conversely long lists ("shopping lists") of prophetic compounds which fall within the scope of the claims but which have not actually been prepared and characterised or at least individually claimed are not classified. Neither are individual compounds generated only via Markush enumerations of generic formulae classified.

All examples are classified individually. Even if classification of the "fully identified" compounds would lead to the assignment of a large number of subgroups, no generalisation to the next hierarchically higher level is made.

However, in case the claims relate to a catalyst and if classification of the examples only does not suitably reflect the subject-matter of the claims, additional, general groups are assigned to cover the scope of the catalyst claims.

When classifying in group B01J31/00, additional information for the catalysts is provided as follows:

- the specifically disclosed intended uses are indexed in B01J2231/00;
- general aspects of the complexes of group B01J31/16, e.g. polynuclearity, ligand type, metal bonding mode(s) and the specifically disclosed central metal(s) therein, as well as additional information regarding any special solvents used for any catalyst system of this group are indexed in B01J2531/00;
- if expedient further compositional aspects of such complexes, e.g. non-coordinating substituents on the ligand described as essential and explicitly mentioned in the claims or the worked examples, are indexed in B01J2540/00; and
- conceptual articles, e.g. reviews, are separately indexed in B01J2231/005 and B01J2531/001.

Example:

A metal-organic framework would be classified in group B01J31/1691, the principal ligands, e.g. dicarboxylate, bipyridine, pyrazine, or 1,4-diazabicyclo[2.2.2]octane [DABCO] would furthermore be classified with the appropriate groups from B01J31/00, e.g. B01J31/2239 for dicarboxylate linkers.

The orthogonal indexing codes B01J2531/0205 - B01J2531/0222, would then be used to define the respective catalyst (component) further according to the respective SBU comprising the metal, e.g.:

- tetrahedral [Zn_4O] in MOF-5 and the IRMOF series => term is classified in B01J2531/0216 since a bi- or polynuclear complex, without metal-carbon bonds, is involved;
- paddle-wheel [$Cu_2(O_2CR)_4$], comprising a Cu-Cu bond, present in typical copper-based MOFs, e.g. [Cu_2(1,4-bdc)$_2$](4,4'-bipy) => term is classified in B01J2531/0219, since a bimetallic complex, without metal-carbon bonds, is involved.

Glossary of terms

Replace: The Glossary of terms table with the revised table below.

bimetallic complex	a discrete coordination complex comprising one or more units of two metals, same or different, with metal-metal

	bonds but no all-metal (M)n rings, e.g. $Cr_2(OAc)_4$, $[(Mo_2)_4(MeOPhNCNPhOMe)_8(Ph(COO)_2)_4]$, $[Ph_2P\text{-}X\text{-}PPh_2]Pt(Cl)SnCl_3$, $[Cp(CO)_2Mn=]_2Pb$
bi- or polynuclear complex	a coordination complex comprising two or more same or different metal atoms, without M-M bonds; e.g. Cp(Lx)Zr-imidazole-Zr(Lx)Cp, $[R_2PCp\text{-}Fe\text{-}CpPR_2]Rh(L)_n$, $[(salen)Co(III)]SbF_6$, $Co(II)(salen)Fe(II)Cl_2$
carbenes (carbyne)	a metal coordination complex comprising a formally divalent (trivalent) ligand with a neutral carbon atom bonded to the metal via two (three) unshared electrons, i.e. a formal derivative of the hypothetical ligand CR_2 (CR); the electrons may be paired or not
catalyst	covers also a carrier forming part of the catalyst, specific additives and co-catalysts
coordination complexes	all donor-acceptor compounds or complex ions comprising organic or inorganic, anionic or neutral Lewis basic ligands, attached to a Lewis acid central metal or metal ion through one or several complexing donor atoms with at least one lone-pair of electrons, e.g. N, O, S, P, to provide at least a sigma-bond; typically the maximum number of same or different ligands according to the coordination number, spatial requirements of the ligand and electronic configuration of the metal is bound in a predictable geometry; complexes of neutral, cationic or anionic hydrocarbon ligands with delocalised charge and/or bonding site, e.g. Pd-olefin complexes or metallocenes, are also included
ionic liquid	an organic salt in the liquid state at the reaction temperature employed, e.g. less than or equal to 100°C or less than or equal to 20°C ("room-temperature ionic liquid")
metal cluster	a coordination complex with 3 to about 1000 same or different metal atoms and further comprising M-M bonds to provide (M)n rings, i.e. size range from atomic to colloid dimensions; e.g. $Rh_x(CO)_y$, $[R_3P=N=PR_3]^+[Ru_3Ir(CO)_{13}]^-$, $[Rh_3(DIPAMP)_3(\mu_3\text{-}OMe)_2]BF_4$, $Pt_4(OAc)_8$, "$Pd(OAc)_2$" = $Pd_3(OAc)_6$
metal-organic framework	crystalline compounds consisting of metal ions or clusters coordinated to often rigid organic molecules as linkers to

	form one-, two-, or three-dimensional structures; the linkers are often dicarboxylates, the metals often Zn, Cu, Fe or Al
N-Heterocyclic carbene	a saturated or unsaturated heterocyclic compound comprising a neutral carbon atom with a lone electron pair (in the typical case of singlet or "nucleophilic" carbenes) adjacent to at least one nitrogen atom
oligomer	compound with more than two identical repeating units connected to one another and typically 500 less than M less than 10000 g/mol; grouped with the respective polymers
organic complexes	all coordination complexes comprising organic ligands
organic compound	a compound in which carbon is bonded to - a second carbon; - at least one atom of hydrogen or halogen; or - nitrogen by a single or double bond; except cyanic acid (HOCN), cyanogen (NCCN), cyanamide (H_2NCN), cyanogen halide (HalCN), hydrocyanic acid (HCN), isocyanic acid (HNCO), fulminic acid (HCNO) and metal carbides (MCCM)
organic ligand	a carbon-containing ligand bonded to a central metal in which said carbon is bonded to - a second carbon;- at least one atom of hydrogen or halogen; or - nitrogen by a single or double bond; except cyanic acid (HO-C≡N), cyanogen (N≡C-C≡N), cyanamide (H_2N-C≡N), cyanogen halide (Hal-C≡N), hydrocyanic acid (HC≡N), isocyanic acid (HN=C=O), fulminic acid (HC≡N-O), carbides (C≡C) and the respective anionic ligands derived by deprotonation (O-C≡N, N=C=N, C≡N, N=C=O, C≡N-O)
organometallic complexes	all coordination complexes comprising a M-C bond, e.g. metal carbonyls; also includes complexes which are not strictly organometallic per se, e.g. comprising only N, O, S and/or P coordinated ligands, but are described as involving, or known to involve, organometallic intermediates and/or transition states during use, e.g. Group 8-10 metal complexes for a variety of catalytic reactions or steps thereof, such as oxidative addition, e.g. hydrogenation, carbonylation or epoxidation
organometallic compound	all organic compound wherein a metal or metalloid atom is bonded directly to a carbon fragment, the latter being

	formally anionic, no further neutral ligands being coordinated to the metal and the compound requiring no further cations for charge balance; e.g. $M(CR_3)_n$ with M=main group metal, n=valency of metal and R=H or hydrocarbyl
polymer	a macromolecular substance (typically M>10000 g/mol) comprising repeating units made up of one or several kinds of atoms or groups of atoms, which are identically connected to one another

B01J39/00

Definition statement

Replace: The Definition statement text with the revised text below.

- Processes involving solid inorganic or organic cation exchangers and uses of inorganic or organic materials as cation exchangers whereby cations are exchanged between the solid exchanger and a medium to be treated;
- The treatment of inorganic or organic materials used as cation exchangers; and
- Cation exchangers as stationary phases or packings for chromatography processes.

Relationships with other classification places

Replace: The Relationships text with the revised text below.

Compositions, apparatus or processes involving at least two different types of ion exchangers, e.g. two different cation exchangers, or a cation exchanger and an anion exchanger, are classified using a combination of the corresponding groups.

For example:

- A process involving an organic cation exchanger in the strongly acidic form and an organic cation exchanger in the weakly acidic form is classified in group B01J39/05 and group B01J39/07.
- A process involving an inorganic cation exchanger and an inorganic anion exchanger is classified in group B01J39/02 and group B01J41/02.

- A process involving an organic cation exchanger in the strongly acidic form and an organic anion exchanger in the weakly basic form is classified in group B01J39/05 and group B01J41/07.

References

Informative references

Replace: The Informative references table with the revised table below.

Ion exchange resins used as catalyst	B01J31/08
Processes in general for preparing or activating catalysts using ion exchange	B01J37/30
Regeneration or reactivation of catalysts using ion-exchange	B01J38/74
Regeneration or reactivation of cation exchangers	B01J49/00
Modifying dairy products by ion exchange	A23C9/146
Clarifying, fining of non-alcoholic beverage by ion-exchange	A23L2/78
Removal of unwanted matter from foods or foodstuffs using ion exchangers	A23L5/273
Use of ion exchange materials for tobacco smoke filters	A24D3/12
Separation of different isotopes of the same chemical element by ion exchange	B01D59/30
Treatment of water by ion-exchange	C02F1/42
Purification or separation of hydrocarbons with ion-exchangers	C07C7/12
Extraction, separation or purification of peptides by ion exchange chromatography	C07K1/18
Manufacture of shaped structures of ion-exchange resins	C08J5/20
Refining of hydrocarbon oils by ion-exchange material	C10G25/02
Purification, clarification of alcoholic beverages with the aid of ion-exchange material	C12H1/04

Extracting or separating nucleic acids from biological samples by ion-exchange chromatography	C12N15/101
Purification of sugar juices using ion exchange materials	C13B20/14
Extraction of sugar from molasses using ion exchange	C13B35/06
Treatment or purification by ion exchange of solutions obtained from the extraction of metals from ores	C22B3/42
Investigative or analytical chromatography processes involving cation exchange	G01N30/96
Treating radioactively contaminated liquids using ion exchange	G21F9/12

Insert: The new Special rules section below.

Special rules of classification

In groups B01J39/00 - B01J49/00, in the absence of an indication to the contrary, classification is made in the last appropriate place.

Combination sets (C-Sets):

C-Sets statement: #B1Jb

- In #B1Jb, information concerning compositions, apparatus or processes having at least two types of ion exchangers are classified in the form of C-Sets. This applies to the following situations: (1) a process having multiple steps wherein different ion exchange materials in separate vessels/beds/columns used in different steps; or (2) ion exchanging mixture materials (physically mixed or as two separate layers/zones/regions) in the same vessel/bed/column.
- In these C-Sets, both base symbol and the subsequent symbol(s) are selected from groups B01J 39/00 - B01J 49/90.
- However, for mixed bed processes group B01J47/04 should also be allocated as single symbol.
- C-Sets classifications based on #B1Jb are allocated as invention information [INV].

C-Sets syntax rules:

- Each C-Sets can contain two or more symbols.
- The subsequent symbols in the C-Sets are allocated in a given order for multistep process using different ion exchange materials in separate vessels/bed/columns in different steps, e.g. a specific ion-exchange multistep process involving different ion-exchange mechanisms in a given order.
- The subsequent symbols are also in a given order if mixed bed process involves the above situation (2).
- Every alternative embodiment is classified with C-Sets.

C-Sets examples:

- #B1Jb: A process involving an inorganic cation exchanger and an inorganic anion exchanger is classified as (B01J 39/02, B01J 41/02).
- #B1Jb: A process involving an organic cation exchanger in the strongly acidic form and an inorganic anion exchanger in the weakly basic form is classified as (B01J 39/05, B01J 41/07).
- #B1Jb: A process involving a step using an organic cation exchanger in the strongly acidic form followed by a step using an organic cation exchanger in the weakly acidic form is classified as (B01J 39/05, B01J 39/07).
- #B1Jb: A process involving an inorganic cation exchanger and an inorganic anion exchanger is classified as (B01J 39/02, B01J 41/02).
- #B1Jb: A process involving an organic cation exchanger in the strongly acidic form and an organic anion exchanger in the weakly basic form is classified as (B01J 39/05, B01J 41/07).
- #B1Jb**:** An ion exchange resin bed containing a mixture of particles bearing differing functional ion exchange groups wherein the resin bed is (1) a stratified bed containing a weakly basic anion exchange resin as the upper zone and a strongly basic anion exchange resin as the lower zone or (2) a mixed bed containing a macroreticular strongly basic anion exchange resin and a macroreticular strongly acidic cation exchange resin, is classified as (B01J41/07, B01J41/05) and (B01J41/05, B01J39/05) and B01J47/04 as single symbol for the mixed bed.

B01J 41/00

Definition statement

Replace: The Definition statement text with the revised text below.

- Processes involving solid inorganic or organic anion exchangers and uses of solid inorganic or organic materials as anion exchangers whereby anions are exchanged between the solid exchanger and a medium to be treated;
- The treatment of inorganic or organic materials used as anion exchangers; and
- Anion exchangers as stationary phases or packing for chromatography processes.

Relationships with other classification places

Replace: The Relationships text with the revised text below.

Compositions, apparatus or processes involving at least two different types of ion exchangers, e.g. two different anion exchangers, or a cation exchanger and an anion exchanger, are classified using a combination of the corresponding groups.

For example:

- A process involving an organic anion exchanger in the strongly basic form and an organic anion exchanger in the weakly basic form is classified in group B01J41/05 and group B01J41/07.
- A process involving an inorganic cation exchanger and an inorganic anion exchanger is classified in group B01J39/02 and group B01J41/02.
- A process involving an organic cation exchanger in the strongly acidic form and an organic anion exchanger in the weakly basic form is classified in group B01J39/05 and group B01J41/07.

References

Informative references

Replace: The Informative references table with the revised table below.

Ion exchange resins used as catalyst	B01J31/08
Processes in general for preparing or activating catalysts using ion exchange	B01J37/30

Regeneration or reactivation of catalysts using ion-exchange	B01J38/74
Regeneration or reactivation of anion exchangers	B01J49/00
Modifying dairy products by ion exchange	A23C9/146
Clarifying, fining of non-alcoholic beverage by ion-exchange	A23L2/78
Removal of unwanted matter from foods or foodstuffs using ion exchangers	A23L5/273
Use of ion exchange materials for tobacco smoke filters	A24D3/12
Separation of different isotopes of the same chemical element by ion exchange	B01D59/30
Treatment of water by ion-exchange	C02F1/42
Purification or separation of hydrocarbons with ion-exchangers	C07C7/12
Extraction, separation or purification of peptides by ion exchange chromatography	C07K1/18
Manufacture of shaped structures of ion-exchange resins	C08J5/20
Refining of hydrocarbon oils by ion-exchange material	C10G25/02
Purification, clarification of alcoholic beverages with the aid of ion-exchange material	C12H1/04
Extracting or separating nucleic acids from biological samples by ion-exchange chromatography	C12N15/101
Purification of sugar juices using ion exchange materials	C13B20/14
Extraction of sugar from molasses using ion exchange	C13B35/06
Treatment or purification by ion exchange of solutions obtained from the extraction of metals from ores	C22B3/42
Investigative or analytical chromatography processes involving anion exchange	G01N30/96
Treating radioactively contaminated liquids using ion exchange	G21F9/12

Insert: The following new Special rules section.

Special rules of classification

In groups B01J39/00 - B01J49/00, in the absence of an indication to the contrary, classification is made in the last appropriate place.

C-Sets classification:

In this group, C-Sets (e.g. #B1Jb) are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the "Special rules of classification" in B01J39/00.

B01J 43/00

Definition statement

Replace: The Definition statement text with the revised text below.

- Processes involving solid amphoteric ion exchanger materials, i.e. having cation exchanging and anion exchanging groups and uses of such materials whereby both cations and anions are exchanged between the solid exchanger and a medium to be treated;
- The treatment of these materials used as amphoteric ion-exchangers; and
- Amphoteric ion exchange materials as stationary phase or packing for chromatography processes.

References

Limiting references

Replace: The Limiting references table with the revised table below.

Preparative chromatography processes involving ion exchange	B01D15/361

Informative references

Replace: The Informative references table with the revised table below so that the entire section appears as follows.

Ion exchange relating to particular applications, or relating to treating particular compound, may be classified in the following non-exhaustive list:

Ion exchange resins used as catalyst	B01J31/08
Processes in general for preparing or activating catalysts using ion exchange	B01J37/30
Regeneration or reactivation of catalysts using ion-exchange	B01J38/74
Regeneration or reactivation of ion exchangers	B01J49/00
Modifying dairy products by ion exchange	A23C9/146
Clarifying, fining of non-alcoholic beverage by ion-exchange	A23L2/78
Removal of unwanted matter from foods or foodstuffs using ion exchangers	A23L5/273
Use of ion exchange materials for tobacco smoke filters	A24D3/12
Separation of different isotopes of the same chemical element by ion exchange	B01D59/30
Treatment of water by ion-exchange	C02F1/42
Purification or separation of hydrocarbons with ion-exchangers	C07C7/12
Extraction, separation or purification of peptides by ion exchange chromatography	C07K1/18
Manufacture of shaped structures of ion-exchange resins	C08J5/20
Refining of hydrocarbon oils by ion-exchange material	C10G25/02
Purification, clarification of alcoholic beverages with the aid of ion-exchange material	C12H1/04

Extracting or separating nucleic acids from biological samples by ion-exchange chromatography	C12N15/101
Purification of sugar juices using ion exchange materials	C13B20/14
Extraction of sugar from molasses using ion exchange	C13B35/06
Treatment or purification by ion exchange of solutions obtained from the extraction of metals from ores	C22B3/42
Investigative or analytical chromatography processes involving ion exchange	G01N30/96
Treating radioactively contaminated liquids using ion exchange	G21F9/12

Special rules of classification

Replace: The Special rules section text with the revised text below.

In groups B01J39/00 - B01J49/00, in the absence of an indication to the contrary, classification is made in the last appropriate place.

C-Sets classification:

In this group, C-Sets (e.g. #B1Jb) are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the “Special rules of classification” in B01J39/00.

B01J 45/00

Definition statement

Replace: The Definition statement text with the revised text below.

- Processes involving solid inorganic or organic ion exchangers and use of inorganic or organic materials as ion exchangers whereby the ion exchangers forms complexes or chelates and bring about ion exchange between the solid exchanger and a medium to be treated;
- The treatment of inorganic or organic materials used as ion exchanger in which a complex or chelate is formed; and

- Ion exchange materials in which a complex or chelate is formed, the materials being used as stationary phases or packing for chromatography processes.

References

Limiting references

Replace: The Limiting references table with the revised table below.

Preparative chromatography processes or apparatus therefor involving ion exchange	B01D15/361

Informative references

Replace: The Informative references table with the revised table below so that the entire section appears as follows.

Ion exchange relating to particular applications, or relating to treating particular compound, may be classified in the following non-exhaustive list:

Ion exchange resins used as catalyst	B01J31/08
Processes in general for preparing or activating catalysts using ion exchange	B01J37/30
Regeneration or reactivation of catalysts using ion-exchange	B01J38/74
Regeneration or reactivation of ion exchangers	B01J49/00
Modifying dairy products by ion exchange	A23C9/146
Clarifying, fining of non-alcoholic beverage by ion-exchange	A23L2/78
Removal of unwanted matter from foods or foodstuffs using ion exchangers	A23L5/273
Use of ion exchange materials for tobacco smoke filters	A24D3/12
Separation of different isotopes of the same chemical element by ion exchange	B01D59/30
Treatment of water by ion-exchange	C02F1/42
Purification or separation of hydrocarbons with ion-exchangers	C07C7/12

Extraction, separation or purification of peptides by ion exchange chromatography	C07K1/18
Manufacture of shaped structures of ion-exchange resins	C08J5/20
Refining of hydrocarbon oils by ion-exchange material	C10G25/02
Purification, clarification of alcoholic beverages with the aid of ion-exchange material	C12H1/04
Extracting or separating nucleic acids from biological samples by ion-exchange chromatography	C12N15/101
Purification of sugar juices using ion exchange materials	C13B20/14
Extraction of sugar from molasses using ion exchange	C13B35/06
Treatment or purification by ion exchange of solutions obtained from the extraction of metals from ores	C22B3/42
Investigative or analytical chromatography processes or apparatus therefor involving ion exchange	G01N30/96
Treating radioactively contaminated liquids using ion exchange	G21F9/12

Special rules of classification

Replace: The Special rules text with the revised text below.

In groups B01J39/00 - B01J49/00, in the absence of an indication to the contrary, classification is made in the last appropriate place.

C-Sets classification:

In this group, C-Sets (e.g. #B1Jb) are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the “Special rules of classification” in B01J39/00.

B01J 47/00

Delete: The entire Relationships with other classification places section.

References

Informative references

Replace: The Informative references table with the revised table below.

Ion exchange resins used as catalyst	B01J31/08
Processes in general for preparing or activating catalysts using ion exchange	B01J37/30
Regeneration or reactivation of catalysts using ion-exchange	B01J38/74
Regeneration or reactivation of ion exchangers	B01J49/00
Modifying dairy products by ion exchange	A23C9/146
Clarifying, fining of non-alcoholic beverage by ion-exchange	A23L2/78
Removal of unwanted matter from foods or foodstuffs using ion exchangers	A23L5/273
Use of ion exchange materials for tobacco smoke filters	A24D3/12
Arrangements or adaptation of water softeners and constructional details of the salt container or the ion exchanger in washing or rinsing machines for crockery or tableware	A47L15/4229
Separation of different isotopes of the same chemical element by ion exchange	B01D59/30
Processes or apparatus using semi-permeable membranes for electrolysis or electro-osmosis; Such processes or apparatus comprising ion exchange materials	B01D61/42
Treatment of water by ion-exchange	C02F1/42
Treatment of water by electrodialysis, electrodeionisation, electro-osmosis, capacitive deionisation	C02F1/469

Purification or separation of hydrocarbons with ion-exchangers	C07C7/12
Extraction, separation or purification of peptides by ion exchange chromatography	C07K1/18
Manufacture of shaped structures of ion-exchange resins	C08J5/20
Refining of hydrocarbon oils by ion-exchange material	C10G25/02
Purification, clarification of alcoholic beverages with the aid of ion-exchange material	C12H1/04
Extracting or separating nucleic acids from biological samples by ion-exchange chromatography	C12N15/101
Purification of sugar juices using ion exchange materials	C13B20/14
Extraction of sugar from molasses using ion exchange	C13B35/06
Treatment or purification by ion exchange of solutions obtained from the extraction of metals from ores	C22B3/42
Arrangements of water softeners in washing machines	D06F39/007
Investigative or analytical chromatography processes involving ion exchange	G01N30/96
Treating radioactively contaminated liquids using ion exchange	G21F9/12

Insert: The new Special rules section shown below.

Special rules of classification

In groups B01J39/00 - B01J49/00, in the absence of an indication to the contrary, classification is made in the last appropriate place.

C-Sets classification:

In this group, C-Sets (e.g. #B1Jb) are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the “Special rules of classification” in B01J39/00.

B01J 49/00

Definition statement

Replace: The Definition statement text with the revised text below.

- Processes or apparatus for regeneration or reactivation of ion-exchangers;
- Reagents for regenerating or reactivating ion exchangers; and
- Cleaning or rinsing of ion exchanger beds.

Delete: The entire Relationships with other classification places section.

References

Informative references

Replace: The Informative references table with the revised table below.

Regeneration or reactivation of solid sorbents	B01J20/34
Arrangements or adaptation of water softeners and constructional details of the salt container or the ion exchanger in washing or rinsing machines for crockery or tableware	A47L15/4229
Treatment of water by ion-exchange	C02F1/42
Arrangements of water softeners in washing machines	D06F39/007

Insert: The following new Special rules section.

Special rules of classification

In groups B01J39/00 - B01J49/00, in the absence of an indication to the contrary, classification is made in the last appropriate place.

C-Sets classification:

In this group, C-Sets (e.g. #B1Jb) are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the “Special rules of classification” in B01J39/00.