C08F

CPC  COOPERATIVE PATENT CLASSIFICATION

C  CHEMISTRY; METALLURGY
(NOTES omitted)

CHEMISTRY

C08  ORGANIC MACROMOLECULAR COMPOUNDS; THEIR PREPARATION OR CHEMICAL WORKING-UP; COMPOSITIONS BASED THEREON

C08F  MACROMOLECULAR COMPOUNDS OBTAINED BY REACTIONS ONLY INVOLVING CARBON-TO-CARBON UNSATURATED BONDS

NOTES
1. In this subclass, boron or silicon are considered as metals.
2. In this subclass, the following expression is used with the meaning indicated:
   • "aliphatic radical" means an acyclic or a non-aromatic carbocyclic carbon skeleton which is considered to be terminated by every bond to:
     a. an element other than carbon;
     b. a carbon atom having a double bond to one atom other than carbon;
     c. an aromatic carbocyclic ring or a heterocyclic ring.
   Examples: Polymers of
     a. CH$_2$:CH—O—CH$_2$:CH$_2$:NH—COO—CH$_2$:CH$_2$:OH are classified in group C08F 16/28;
     b. CH$_2$:CH-C(=O)-CH=CH$_2$ are classified in group C08F 16/36;
     c. para-C$_6$H$_4$Cl(CH=CH$_2$)$_2$ are classified in group C08F 12/18.
3. Therapeutic activity of compounds is further classified in subclass A61P.
4. In this subclass, the last place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, a catalyst or a polymer is classified in the last appropriate place.
5. In this subclass:
   a. macromolecular compounds and their preparation are classified in the groups for the type of compound prepared. General processes for the preparation of macromolecular compounds according to more than one main group are classified in groups C08F 2/00-C08F 8/00 for the processes employed. Processes for the preparation of macromolecular compounds are also classified in the groups for the types of reactions employed, if of interest;
   b. subject matter relating to both homopolymers and copolymers is classified in groups C08F 10/00-C08F 38/00;
   c. subject matter limited to homopolymers is classified only in groups C08F 110/00-C08F 138/00;
   d. subject matter limited to copolymers is classified only in groups C08F 210/00-C08F 246/00;
   e. in groups C08F 210/00-C08F 238/00, in the absence of an indication to the contrary, a copolymer is classified according to the major monomeric component.
6. This subclass covers also compositions based on monomers which form macromolecular compounds classifiable in this subclass. In this subclass:
   a. if the monomers are defined, classification is made according to the polymer to be formed:
      • in groups C08F 10/00-C08F 246/00 if no preformed polymer is present;
      • in groups C08F 251/00-C08F 291/00 if a preformed polymer is present, considering the reaction to take place as a graft or cross-linking reaction;
   b. if the presence of compounding ingredients is of interest, classification is made in group C08F 2/44;
   c. if the compounding ingredients are of interest per se, classification is also made in subclass C08K.
7. In this subclass, combination sets [C-Sets] are used. The detailed information about the C-Sets construction and the associated syntax rules are found in the Definitions.

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Processes: Catalysts
2/00 Processes of polymerisation

NOTE
Group C08F 2/00 and subgroups can be incomplete according to the following classification rules:

• if a process of polymerisation is specifically used for only one type of polymer, it is not classified in C08F 2/00;
• in such a case, the classification symbol of C08F 2/00 providing for the process of polymerisation may be used in the form of
2/01. (Multistage polymerisation processes characterised by a change in reactor conditions without deactivating the intermediate polymer (C08F 295/00, C08F 297/00) take precedence)

2/02. (Scale prevention in a polymerisation reactor or its auxiliary parts)

2/04. . . (by a prior coating on the reactor walls)

2/07. . . (Scale prevention in the auxiliary parts)

2/08. . . (cleaning reaction vessels using chemicals (mechanical methods B08B 9/08))

2/01. . . characterised by special features of the polymerisation apparatus used

2/02. . . Polymisation in bulk

2/04. . . Polymisation in solution (C08F 2/32 takes precedence)

2/06. . . Organic solvent

2/08. . . . with the aid of dispersing agents for the polymer

2/10. . . Aqueous solvent

2/12. . . Polymisation in non-solvents (C08F 2/32 takes precedence)

2/13. . . Organic medium

2/16. . . Aqueous medium

2/18. . . Suspension polymerisation

2/20. . . . with the aid of macromolecular dispersing agents

2/22. . . . Emulsion polymerisation

2/24. . . . . with the aid of emulsifying agents

2/26. . . . . . anionic

2/28. . . . . . cationic

2/30. . . . . . non-ionic

2/32. . . Polymerisation in water-in-oil emulsions

2/34. . . Polymerisation in gaseous state

2/36. . . Polymerisation in solid state

2/38. . . Polymerisation using regulators, e.g. chain terminating agents [e.g. telomerisation]

2/40. . . . using retarding agents

2/42. . . . using short-stopping agents

2/44. . . . Polymerisation in the presence of compounding ingredients, e.g. plastisizers, dyestuffs, fillers

2/46. . . . Polymerisation initiated by wave energy or particle radiation

2/48. . . . . by ultra-violet or visible light

2/50. . . . . with sensitising agents

2/52. . . . . by electric discharge, e.g. volatolisation

2/54. . . . . by X-rays or electrons

2/56. . . . . by ultrasonic vibrations

2/58. . . . Polymerisation initiated by direct application of electric current (electrolytic processes, e.g. electrophoresis C25)

2/60. . . . Polymerisation by the diene synthesis

4/00. Polymerisation catalysts (catalysts in general B01J)

NOTES

1. Group C08F 4/00 and subgroups can be incomplete according to the following classification rules:

   • if a catalyst is specifically used for only one type of polymer, it is not classified in C08F 4/00;

   • in such a case, the classification symbol of C08F 4/00 providing for the catalyst may be used as a symbol for a C-Set in the groups providing for the polymer, e.g. (C08F 12/04, C08F 4/62);

   • this method of classification is applied only when a note after the group providing for the polymer explicitly indicates which symbols of C08F 4/00 may be used for forming the Combination Set.

2. When classifying in group C08F 4/00, the type of catalyst can be further indexed by using indexing codes chosen from C08F 2410/00, C08F 2420/00 or their subgroups

4/005. . . [Friedel-Crafts catalysts in general]

NOTE

Where a carrier is considered of particular interest a further classification may be made in group C08F 4/02.

4/02. . . Carriers therefor

4/022. . . . [Magnesium halide as support anhydrous or hydrated or complexed by means of a Lewis base for Ziegler-type catalysts]

4/025. . . . [Metal oxides]

4/027. . . . [Polymers]

4/04. . . . Azo-compounds

4/06. . . . Metallic compounds other than hydrides and other than metallo-organic compounds; Boron halide or aluminium halide complexes with organic compounds containing oxygen

4/08. . . . of alkali metals

4/083. . . . . [an alkali metal bound to oxygen]

4/086. . . . . . [an alkali metal bound to nitrogen, e.g. LiN(C2H5)2]

4/10. . . . of alkaline earth metals, zinc, cadmium, mercury, copper or silver

4/12. . . . . of boron, aluminium, gallium, indium, thallium or rare earths

4/14. . . . . Boron halides or aluminium halides;

    Complexes thereof with organic compounds containing oxygen

4/16. . . . . of silicon, germanium, tin, lead, titanium, zirconium or hafnium

4/18. . . . . Oxides

4/20. . . . . of antimony, bismuth, vanadium, niobium or tantalum

4/22. . . . . . of chromium, molybdenum or tungsten

4/24. . . . . Oxides

4/26. . . . . . of manganese, iron group metals or platinum group metals

4/28. . . . Oxygen or compounds releasing free oxygen (redox systems C08F 4/40)

4/30. . . . Inorganic compounds

4/32. . . . Organic compounds
Per-compounds with one peroxy-radical
Per-compounds with more than one peroxy-radical
Mixtures of peroxy-compounds
Redox systems
Metals; Metal hydrides; Metallo-organic compounds; Use thereof as catalyst precursors
. . . selected from light metals, zinc, cadmium, mercury, copper, silver, gold, boron, gallium, indium, thallium, rare earths or actinides
. . . selected from alkali metals
. . . . . . (Catalysts containing at least two different components covered by the same or by different subgroups of group C08F 4/46, e.g. butyllithium + propylrubidium)
. . . . . . (selected from sodium or potassium (C08F 4/461 takes precedence))
. . . . . . (Metallic sodium or potassium)
. . . . . . (an alkali metal bound to a cyclic carbon)
. . . . . . (at least two metal atoms in the same molecule)
. . . . . . selected from lithium, rubidium, caesium or francium ((C08F 4/461 takes precedence))
. . . . . . (Metallic lithium, rubidium, caesium or francium)
. . . . . . (an alkali metal bound to a cyclic carbon)
. . . . . . (at least two metal atoms in the same molecule)
. . . . . . (at least two lithium atoms in the same molecule)
. . . selected from alkaline earth metals, zinc, cadmium, mercury, copper or silver
. . . selected from boron, aluminium, gallium, indium, thallium or rare earths (C08F 4/14 takes precedence)
. . . together with other compounds thereof
. . . . . . (rare earths being present, e.g. triethylaluminium + neodymium octanoate)
. . . . . . Alkali metals being the only metals present, e.g. Alfin catalysts
. . . . . . (Lithium being present, e.g. butyllithium + sodiumphenoxide)
. . . together with silicon, germanium, tin, lead, antimony, bismuth or compounds thereof
. . . together with refractory metals, iron group metals, platinum group metals, manganese, rhenium {technetium} or compounds thereof

NOTES
1. In groups C08F 4/602-C08F 4/62, the following term is used with the meaning indicated: “component” comprises a transition metal or a compound thereof, pretreated or not.
2. In groups C08F 4/602-C08F 4/619, the group C08F 4/60003 takes precedence)

[the metallic compound containing a multidentate ligand, i.e. a ligand capable of donating two or more pairs of electrons to form a coordinate or ionic bond (not used)]

NOTE
For monoanionic compounds, the charge is on the last mentioned atom; for dianionic compounds, the charge is on the first and the last mentioned atoms except for compounds marked with * where the charge is on the marked atom
Processes; Catalysts

C08F

4/602 . . . . Component covered by group C08F 4/60 with an organo-aluminium compound [(C08F 4/60003 - C08F 4/60196 take precedence)]

4/6022 . . . . [Component of C08F 4/60 containing at least two different metals]

4/6024 . . . . [containing magnesium]

4/6026 . . . . [containing aluminium]

4/6028 . . . . [with an aluminoxane, i.e. a compound containing an -Al-O-Al-group]

4/603 . . . . Component covered by group C08F 4/60 with a metal or compound covered by group C08F 4/44 other than an organo-aluminium compound [(C08F 4/60003 - C08F 4/60196 take precedence)]

4/6032 . . . . [Component of C08F 4/60 containing at least two different metals]

4/6035 . . . . [containing magnesium]

4/6037 . . . . [containing aluminium]

4/605 . . . . Component covered by group C08F 4/60 with a metal or compound covered by group C08F 4/44, not provided for in a single group of groups C08F 4/602 or C08F 4/603 [(C08F 4/60003 - C08F 4/60196 take precedence)]

4/6052 . . . . [Component of C08F 4/60 containing at least two different metals]

4/6055 . . . . [containing magnesium]

4/6057 . . . . [containing aluminium]

4/606 . . . . Catalysts comprising at least two different metals, in metallic form or as compounds thereof, in addition to the component covered by groups C08F 4/40 [(C08F 4/60003 - C08F 4/60196 take precedence)]

4/6065 . . . . [containing silicium]

4/607 . . . . Catalysts containing a specific non-metal or metal-free compound [(C08F 4/60003 - C08F 4/60196 take precedence)]

4/608 . . . . inorganic

4/609 . . . . [hydrocarbon]

4/6091 . . . . [containing aliphatic unsaturation]

4/6093 . . . . [containing halogen]

4/6094 . . . . [containing oxygen]

4/6095 . . . . [containing nitrogen]

4/6096 . . . . [containing sulfur]

4/6097 . . . . [containing phosphorus]

4/6098 . . . . [containing another heteroatom]

4/61 . . . . Pretreating the metal or compound covered by group C08F 4/60 before the final contacting with the metal or compound covered by group C08F 4/44 [(C08F 4/60003 - C08F 4/60196 take precedence)]

4/611 . . . . Pretreating with non-metals or metal-free compounds

4/612 . . . . Pretreating with metals or metal-containing compounds

4/613 . . . . with metals covered by group C08F 4/60 or compounds thereof

4/614 . . . . with magnesium or compounds thereof

4/6141 . . . . [and metals of C08F 4/60 or compounds thereof]

4/6143 . . . . [halides of magnesium]

4/6145 . . . . [and metals of group C08F 4/60 or compounds thereof]

4/6146 . . . . [organo-magnesium compounds]

4/6148 . . . . [magnesium or compounds thereof not provided for in C08F 4/6143 or C08F 4/6146]

4/615 . . . . with aluminium or compounds thereof

4/6152 . . . . [and metals of C08F 4/60 or compounds thereof]

4/6155 . . . . [and magnesium or compounds thereof]

4/6157 . . . . [and metals of C08F 4/60 or compounds thereof]

4/616 . . . . with silicon or compounds thereof

4/6162 . . . . [and metals of C08F 4/60 or compounds thereof]

4/6165 . . . . [and magnesium or compounds thereof]

4/6167 . . . . [and aluminium or compounds thereof]

4/617 . . . . with metals or metal-containing compounds, not provided for in groups C08F 4/613 - C08F 4/616

4/6172 . . . . [and metals of C08F 4/60 or compounds thereof]

4/6174 . . . . [and magnesium or compounds thereof]

4/6176 . . . . [and aluminium or compounds thereof]

4/6178 . . . . [and silicon or compounds thereof]

4/618 . . . . with metals or metal-containing compounds, provided for in at least two of the groups C08F 4/613 - C08F 4/617

4/6181 . . . . [and metals of C08F 4/60 or compounds thereof]

4/6183 . . . . [and magnesium or compounds thereof]

4/6185 . . . . [and aluminium or compounds thereof]

4/6186 . . . . [and silicon or compounds thereof]

4/6188 . . . . [and metals or metal-containing compounds of C08F 4/617]

4/619 . . . . Component covered by group C08F 4/60 containing a transition metal-carbon bond [(C08F 4/60003 - C08F 4/60196 take precedence)]

4/61904 . . . . [in combination with another component of C08F 4/60]

4/61908 . . . . [in combination with an ionising compound other than aluminoxane, e.g. (C6H5)3B X”]

4/61912 . . . . [in combination with an organoaluminium compound]

4/61916 . . . . [supported on a carrier, e.g. silica, MgCl2, polymer]

4/6192 . . . . containing at least one cyclopentadienyl ring, condensed or not, e.g. an indenyl or a fluorenyl ring

4/61922 . . . . [containing at least two cyclopentadienyl rings, fused or not]
NOTE

Group C08F 4/62003 takes precedence over groups C08F 4/622 - C08F 4/639

THE METALLIC COMPOUND CONTAINING A MULTIDENTATE LIGAND, I.E. A LIGAND CAPABLE OF DONATING TWO OR MORE PAIRS OF ELECTRONS TO FORM A COORDINATE OR IONIC BOND (NOT USED)

NOTE

For monoanionic compounds, the charge is on the last mentioned atom; for dianionic compounds, the charge is on the first and the last mentioned atoms except for compounds marked with * where the charge is on the marked atom.

BIDENTATE LIGAND (NOT USED)

NEUTRAL LIGAND

TETRA- OR MULTI-DENTATE LIGAND (NOT USED)

DIANIONIC LIGAND

Catalysts containing a specific non-metal or metal-free compound (C08F 4/62003 - C08F 4/62196 take precedence)

Component covered by group C08F 4/62003 with an organo-aluminium compound (C08F 4/62003 - C08F 4/62196 take precedence)

Component containing aluminium

Component of C08F 4/62 containing at least two different metals

Catalysts comprising at least two different metals, in metallic form or as compounds thereof, in addition to the component covered by group C08F 4/62

Component of C08F 4/62 containing at least two different metals

Catalysts containing silicium
Pretreating the metal or compound covered by group C08F 4/62 before the final contacting with the metal or compound covered by group C08F 4/44 (C08F 4/62003 - C08F 4/62196 take precedence)

4/631 Pretreating with non-metals or metal-free compounds
4/632 Pretreating with metals or metal-containing compounds
4/633 with metals covered by group C08F 4/62 or compounds thereof
4/634 with magnesium or compounds thereof
4/6341 { and metals of C08F 4/62 or compounds thereof}
4/6343 [halides of magnesium]
4/6345 { and metals of C08F 4/62 or compounds thereof}
4/6346 [organo-magnesium compounds]
4/6348 [magnesium or compounds thereof not provided for in C08F 4/6345 or C08F 4/6346]
4/635 with aluminium or compounds thereof
4/6352 { and metals of C08F 4/62 or compounds thereof}
4/6355 [magnesium or compounds thereof]
4/6357 { and metals of C08F 4/62 or compounds thereof}
4/636 with silicon or compounds thereof
4/6362 [metals of C08F 4/62 or compounds thereof]
4/6365 [magnesium or compounds thereof]
4/6367 [aluminium or compounds thereof]
4/637 with metals or metal-containing compounds, not provided for in groups C08F 4/633 - C08F 4/636
4/6372 { and metals of C08F 4/62 or compounds thereof}
4/6374 [magnesium or compounds thereof]
4/6376 [aluminium or compounds thereof]
4/6378 [silicon or compounds thereof]
4/638 with metals or metal-containing compounds, not provided for in a single group of groups C08F 4/633 - C08F 4/637
4/6381 { and metals or metal-containing compounds of C08F 4/62}
4/6383 [magnesium or compounds thereof]
4/6385 [aluminium or compounds thereof]
4/6386 [silicon or compounds thereof]
4/6388 { and metals or metal-containing compounds of C08F 4/637}
4/639 Component covered by group C08F 4/62 containing a transition metal-carbon bond (C08F 4/62003 - C08F 4/62196 take precedence)
4/6390 Component covered by another heteroatom
4/6392 containing at least one cyclopentadienyl ring, condensed or not, e.g. an indenyl or a fluorenyl ring
4/63922 containing at least two cyclopentadienyl rings, fused or not
4/63925 { two cyclopentadienyl rings being mutually non-bridged]
4/63927 { two cyclopentadienyl rings being mutually bridged]
4/64 Titanium, zirconium, hafnium or compounds thereof

NOTE
Group C08F 4/64003 takes precedence over groups C08F 4/642 - C08F 4/659

4/64003 { the metallic compound containing a multidentate ligand, i.e. a ligand capable of donating two or more pairs of electrons to form a coordinate or ionic bond (not used) }

NOTE
For monoanionic compounds, the charge is on the last mentioned atom; for diionic compounds, the charge is on the first and the last mentioned atoms except for compounds marked with * where the charge is on the marked atom

4/64006 { Bidentate ligand (not used) }
Catalysts comprising at least two different metals, in metallic form or as compounds thereof, in addition to the component covered by group C08F 4/64.

4/646 . . . . . . . . . . . . (Component of C08F 4/64 containing at least two different metals)

4/647 . . . . . . . . . . . . Catalysts containing a specific non-metal or metal-free compound

4/648 . . . . . . . . . . . . inorganic

4/649 . . . . . . . . . . . . organic

4/6491 . . . . . . . . . . . . [hydrocarbon]

4/6492 . . . . . . . . . . . . [containing aliphatic unsaturation]

4/6493 . . . . . . . . . . . . [containing halogen]

4/6494 . . . . . . . . . . . . [containing oxygen]

4/6495 . . . . . . . . . . . . [containing nitrogen]

4/6496 . . . . . . . . . . . . [containing sulfur]

4/6497 . . . . . . . . . . . . [containing phosphorus]

4/6498 . . . . . . . . . . . . [containing another heteroatom]

4/65 . . . . . . . . . . . . Pretreating the metal or compound covered by group C08F 4/64 before the final contacting with the metal or compound covered by group C08F 4/64.

4/651 . . . . . . . . . . . . Pretreating with non-metals or metal-free compounds

4/652 . . . . . . . . . . . . Pretreating with metals or metal-containing compounds

4/653 . . . . . . . . . . . . with metals of C08F 4/64 or compounds thereof

4/654 . . . . . . . . . . . . with magnesium or compounds thereof

4/6541 . . . . . . . . . . . . [and metals of C08F 4/64 or compounds thereof]

4/6543 . . . . . . . . . . . . [halides of magnesium]

4/6545 . . . . . . . . . . . . [and metals of C08F 4/64 or compounds thereof]

4/6546 . . . . . . . . . . . . [organo-magnesium compounds]

4/6548 . . . . . . . . . . . . [magnesium or compounds thereof, not provided for in C08F 4/6543 or C08F 4/6546]

4/655 . . . . . . . . . . . . with aluminium or compounds thereof

4/6552 . . . . . . . . . . . . [and metals of C08F 4/64 or compounds thereof]

4/6555 . . . . . . . . . . . . [and magnesium or compounds thereof]

4/6557 . . . . . . . . . . . . [and metals of C08F 4/64 or compounds thereof]
Processes; Catalysts

4/656 . . . . . . . . . . . . . . . . with silicon or compounds thereof
4/6562 . . . . . . . . . . . . . . . . { (and metals of C08F 4/64 or compounds thereof)
4/6565 . . . . . . . . . . . . . . . . { (and magnesium or compounds thereof)
4/6567 . . . . . . . . . . . . . . . . { (and aluminium or compounds thereof)
4/657 . . . . . . . . . . . . . . . . with metals or metal-containing compounds, not provided for in groups C08F 4/653 - C08F 4/656
4/6572 . . . . . . . . . . . . . . . . { (and metals of C08F 4/64 or compounds thereof)
4/6574 . . . . . . . . . . . . . . . . { (and magnesium or compounds thereof)
4/6576 . . . . . . . . . . . . . . . . { (and aluminium or compounds thereof)
4/6578 . . . . . . . . . . . . . . . . { (and silicon or compounds thereof)
4/658 . . . . . . . . . . . . . . . . with metals or metal-containing compounds, not provided for in a single group of groups C08F 4/653 - C08F 4/657
4/6581 . . . . . . . . . . . . . . . . { (and metals of C08F 4/64 or compounds thereof)
4/6583 . . . . . . . . . . . . . . . . { (and magnesium or compounds thereof)
4/6585 . . . . . . . . . . . . . . . . { (and aluminium or compounds thereof)
4/6586 . . . . . . . . . . . . . . . . { (and silicon or compounds thereof)
4/6588 . . . . . . . . . . . . . . . . { (and metals or metal-containing compounds of C08F 4/657)
4/659 . . . . . . . . . . . . . . . . Component covered by group C08F 4/64 containing a transition metal-carbon bond { (C08F 4/64003 - C08F 4/64196 take precedence) }
4/65904 . . . . . . . . . . . . . . . . { in combination with another component of C08F 4/64)
4/65908 . . . . . . . . . . . . . . . . { in combination with an ionising compound other than aluminium, e.g. (C6F5)3B X* }
4/65912 . . . . . . . . . . . . . . . . { in combination with an organoaluminium compound)
4/65916 . . . . . . . . . . . . . . . . { supported on a carrier, e.g. silica, MgCl2, polymer }
4/6592 . . . . . . . . . . . . . . . . containing at least one cyclopentadienyl ring, condensed or not, e.g. an indenyl or a fluorenyl ring
4/65922 . . . . . . . . . . . . . . . . { containing at least two cyclopentadienyl rings, fused or not }
4/65925 . . . . . . . . . . . . . . . . { [two cyclopentadienyl rings being mutually non-bridged] }
4/65927 . . . . . . . . . . . . . . . . { [two cyclopentadienyl rings being mutually bridged] }
4/68 . . . . . . . . . . . . . . . . Vanadium, niobium, tantalum or compounds thereof
4/68008 . . . . . . . . . . . . . . . . { the metallic compound containing a multidentate ligand, i.e. a ligand capable of donating two or more pairs of electrons to form a coordinate or ionic bond (not used) }

NOTE

For monoanionic compounds, the charge is on the last mentioned atom; for dianionic compounds, the charge is on the first and the last mentioned atoms except for compounds marked with * where the charge is on the marked atom

4/68017 . . . . . . . . . . . . . . . . { Bidentate ligand (not used) }
4/68025 . . . . . . . . . . . . . . . . { Neutral ligand }
4/68034 . . . . . . . . . . . . . . . . { NN }
4/68043 . . . . . . . . . . . . . . . . { NO }
4/68051 . . . . . . . . . . . . . . . . { NS }
4/6806 . . . . . . . . . . . . . . . . { OS }
4/68068 . . . . . . . . . . . . . . . . { PN }
4/68077 . . . . . . . . . . . . . . . . { PO }
4/68086 . . . . . . . . . . . . . . . . { PP }
4/68094 . . . . . . . . . . . . . . . . { PS }
4/68103 . . . . . . . . . . . . . . . . { Monoanionic ligand }
4/68112 . . . . . . . . . . . . . . . . { NN }
4/6812 . . . . . . . . . . . . . . . . { NO }
4/68129 . . . . . . . . . . . . . . . . { NS }
4/68137 . . . . . . . . . . . . . . . . { ON }
4/68146 . . . . . . . . . . . . . . . . { OO }
4/68155 . . . . . . . . . . . . . . . . { PN }
4/68163 . . . . . . . . . . . . . . . . { PO }
4/68172 . . . . . . . . . . . . . . . . { Dianionic ligand }
4/68181 . . . . . . . . . . . . . . . . { NN }
4/68189 . . . . . . . . . . . . . . . . { NO }
4/68198 . . . . . . . . . . . . . . . . { OO }
4/68206 . . . . . . . . . . . . . . . . { Tridentate ligand (not used) }
4/68215 . . . . . . . . . . . . . . . . { Neutral ligand }
4/68224 . . . . . . . . . . . . . . . . { NNN }
4/68232 . . . . . . . . . . . . . . . . { NNO }
4/68241 . . . . . . . . . . . . . . . . { NNS }
4/6825 . . . . . . . . . . . . . . . . { NSN }
4/68258 . . . . . . . . . . . . . . . . { PNN }
4/68267 . . . . . . . . . . . . . . . . { PNP }
4/68275 . . . . . . . . . . . . . . . . { Monoanionic ligand }
4/68284 . . . . . . . . . . . . . . . . { NNN }
4/68293 . . . . . . . . . . . . . . . . { NNO }
4/68301 . . . . . . . . . . . . . . . . { ONN }
4/6831 . . . . . . . . . . . . . . . . { ONO }
4/68318 . . . . . . . . . . . . . . . . { ON*O }
4/68327 . . . . . . . . . . . . . . . . { PNO }
4/68336 . . . . . . . . . . . . . . . . { SNN }
4/68344 . . . . . . . . . . . . . . . . { SNO }
4/68353 . . . . . . . . . . . . . . . . { Dianionic ligand }
4/68362 . . . . . . . . . . . . . . . . { NN(R)C }
4/6837 . . . . . . . . . . . . . . . . { NN(R)N }
4/68379 . . . . . . . . . . . . . . . . { NNO }
4/68387 . . . . . . . . . . . . . . . . { ON(R)C }
4/68396 . . . . . . . . . . . . . . . . { ONO }
4/68405 . . . . . . . . . . . . . . . . { O*O*P }
4/68413 . . . . . . . . . . . . . . . . { OSO }
4/69008     . . . .     [the metallic compound containing a multidentate ligand, i.e. a ligand capable of donating two or more pairs of electrons to form a coordinate or ionic bond (not used)]

**NOTE**

For monoaionic compounds, the charge is on the last mentioned atom; for dianionic compounds, the charge is on the first and the last mentioned atoms except for compounds marked with * where the charge is on the marked atom
Processes; Catalysts

2. Groups C08F 6/001, C08F 6/006, C08F 6/008, C08F 6/002, C08F 6/004 take precedence over the other groups.

6/001 [Removal of residual monomers by physical means]

6/003 . . . [from polymer solutions, suspensions, dispersions or emulsions without recovery of the polymer therefrom]

6/005 . . . [from solid polymers]

6/006 [Removal of residual monomers by chemical reaction, e.g. scavenging]

6/008 [Treatment of solid polymer wetted by water or organic solvents, e.g. coagulum, filter cakes]

6/02 Neutralisation of the polymerisation mass, e.g. killing the catalyst (short-stopping C08F 2/42) [also removal of catalyst residues]

6/04 . . . Fractionation

6/06 . . . Treatment of polymer solutions

6/08 . . . Removal of catalyst residues (not used, see C08F 6/02)

6/10 . . . Removal of volatile materials, e.g. monomers, solvents

6/12 . . . Separation of polymers from solutions

6/14 . . . Treatment of polymer emulsions

6/16 . . . Purification

6/18 . . . Increasing the size of the dispersed particles

6/20 . . . Concentration

6/22 . . . Coagulation

6/24 . . . Treatment of polymer suspensions

6/26 . . . Treatment of polymers prepared in bulk [also solid polymers or polymer melts]

6/28 . . . Purification

8/00 Chemical modification by after-treatment

8/02 . . . Alkylation

8/04 . . . Reduction, e.g. hydrogenation

8/06 . . . Oxidation

8/08 . . . Epoxidation

8/10 . . . Acylation

8/12 . . . Hydrolysis

8/14 . . . Esterification

8/16 . . . Lactonisation

8/18 . . . Introducing halogen atoms or halogen-containing groups

NOTE

Classification is given in the form of C-Sets when sufficient information is provided concerning the polymer to be modified. In groups C08F 8/00 - C08F 8/50, the chemical modification of specific polymers is indicated using the subdivisions of C08F 10/00 - C08F 34/04, C08F 38/00 - C08F 38/04, C08F 44/00 - C08F 44/04, C08F 50/00 - C08F 50/04, C08F 56/00 - C08F 56/04, C08F 60/00 - C08F 60/04, C08F 64/00 - C08F 64/04.

Example: (C08F 8/44, C08F 16/06) Otherwise, only the C08F 8/00 - C08F 8/50 symbol(s) is (are) given.
Processes; Catalysts

Homopolymers and copolymers

10/00  Homopolymers and copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond

NOTE

In groups C08F 10/00 - C08F 10/14 the method of polymerisation or the nature of the catalyst may be indicated using the subdivision of C08F 2/00 - C08F 2/58 or of C08F 4/00 - C08F 4/82 in the form of C-Sets. Example: (C08F 10/02, C08F 4/651)

10/02  . Ethene
10/04  . Monomers containing three or four carbon atoms
10/06  . Propene
10/08  . Butenes
10/10  . Isobutene
10/14  . Monomers containing five or more carbon atoms

12/00  Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring

NOTES

1. Until March 2012, in groups C08F 12/04 - C08F 12/08 the method of polymerisation might be indicated using the subdivision of C08F 2/02 - C08F 2/06, C08F 2/16 - C08F 2/30, C08F 2/34 or C08F 2/38 - C08F 2/46 in the form of C-Sets; the nature of the catalyst might be indicated using the subdivision of C08F 4/00 - C08F 4/60, C08F 4/62, C08F 4/64 or C08F 4/68 - C08F 4/82 in the form of C-Sets. Example: (C08F 12/08, C08F 2/20)

2. From April 2012 on, in groups C08F 12/00 - C08F 12/36 the method of polymerisation may be indicated using the subdivision of C08F 2/00 - C08F 2/60 in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of C08F 4/00 - C08F 4/82 in the form of C-Sets. Example: (C08F 12/08, C08F 2/26)

12/02  . Monomers containing only one unsaturated aliphatic radical
12/04  . containing one ring
12/06  . . Hydrocarbons
12/08  . . Styrene
12/12  . . Monomers containing a branched unsaturated aliphatic radical or a ring substituted by an alkyl radical
12/14  . . substituted by hetero atoms or groups containing heteroatoms
12/16  . . . Halogens
12/18  . . . Chlorine
12/20  . . . Fluorine
12/22  . . . Oxygen
12/24  . . . Phenols or alcohols
12/26  . . . Nitrogen
12/28  . . . Amines
12/30  . . . Sulfur
12/32  . . containing two or more rings
12/34  . Monomers containing two or more unsaturated aliphatic radicals
12/36  . . Divinylbenzene

14/00  Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen

14/02  . Monomers containing chlorine
14/04  . . Monomers containing two carbon atoms
14/06  . . Vinyl chloride

NOTE

In group C08F 14/06 the method of polymerisation may be indicated using the subdivision of C08F 2/02 - C08F 2/06, C08F 2/16 - C08F 2/30, C08F 2/34 or C08F 2/38 - C08F 2/46 in the form of C-Sets. Example: (C08F 14/06, C08F 2/44)

14/08  . . Vinylidene chloride
14/12  . . 1,2-Dichloroethylene
14/14  . Monomers containing three or more carbon atoms
14/16  . Monomers containing bromine or iodine
14/18  . Monomers containing fluorine

NOTE

In group C08F 14/18 and subgroups, the method of polymerisation may be indicated using the subdivision of C08F 2/02, C08F 2/04, C08F 2/16, C08F 2/38, C08F 2/44 and C08F 2/46 in the form of C-Sets. Example: (C08F 14/22, C08F 2/38)

14/185  . [Monomers containing fluorine not covered by the groups C08F 14/20, C08F 14/28]
14/20  . . Vinyl fluoride
Homopolymers and copolymers

Monocarboxylic acids having ten or more carbon atoms, Derivatives thereof

Acids, Metal salts or ammonium salts thereof

Acrylic acid; Methacrylic acid; Metal salts or ammonium salts thereof

Anhydrides

Esters

NOTE

In groups C08F 20/12 - C08F 20/14 the method of polymerisation may be indicated using the subdivision of C08F 20/02 - C08F 20/06, C08F 2/16 - C08F 2/30, C08F 2/34 or C08F 2/38 - C08F 2/46 in the form of C-Sets.

Example: ( C08F 20/12, C08F 2/26 )

of monohydric alcohols or phenols

Methyl esters

of phenols or of alcohols containing two or more carbon atoms

with acrylic or methacrylic acids

of polyhydric alcohols or phenols

Esters containing halogen

containing perhaloalkyl radicals

containing oxygen in addition to the carboxy oxygen

containing no aromatic rings in the alcohol moiety

containing aromatic rings in the alcohol moiety

containing epoxy radicals

Esters containing nitrogen

containing oxygen in addition to the carboxy oxygen

Esters containing sulfur

Esters of unsaturated alcohols

Nitriles

Acrylonitrile

NOTE

In group C08F 20/44 the method of polymerisation may be indicated using the subdivision of C08F 20/02 - C08F 20/06, C08F 2/16 - C08F 2/30, C08F 2/34 or C08F 2/38 - C08F 2/46 in the form of C-Sets. Example: ( C08F 20/44, C08F 2/46 )

containing four or more carbon atoms

Amides or imides

Amides

Acrylamide; Methacrylamide

containing oxygen in addition to the carbonamido oxygen

containing nitrogen in addition to the carbonamido nitrogen

Monocarboxylic acids having ten or more carbon atoms; Derivatives thereof

Acids; Metal salts or ammonium salts thereof

Anhydrides

Esters

Nitriles; Amides; Imides
Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having one carbon-to-carbon double bond, and at least one being terminated by a carboxyl radical and containing at least one other carboxyl radical in the molecule; Salts, anhydrides, esters, amides, imides or nitrides thereof

Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, each having one carbon-to-carbon double bond, and containing phosphorus, selenium, tellurium or a metal (metal salts, e.g. phenolates or alcohohlates, see the parent compounds)

Homopolymers and copolymers of cyclic compounds having one or more unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic ring system

Homopolymers and copolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a carbocyclic ring system

Homopolymers and copolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a heterocyclic ring (cyclic esters of polyfunctional acids C08F 18/00; cyclic anhydrides or imides C08F 22/00)

Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds (C08F 32/00) takes precedence

NOTE
In C08F 36/00 - C08F 36/22 the method of polymerisation may be indicated using the subdivision of C08F 3/00 - C08F 3/28 in the form of C-sets; the nature of the catalyst may be indicated using the subdivision of C08F 4/00 - C08F 4/60, C08F 4/62, C08F 4/64, C08F 4/642, C08F 4/6421, C08F 4/643 or C08F 4/68 - C08F 4/82 in the form of C-sets. Example: (C08F 36/04, C08F 4/642)
<table>
<thead>
<tr>
<th>Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>38/00 Homopolymers and copolymers of compounds having one or more carbon-to-carbon triple bonds</td>
<td></td>
</tr>
<tr>
<td>38/02 .</td>
<td>Acetylene</td>
</tr>
<tr>
<td>38/04 .</td>
<td>Vinylacetylene</td>
</tr>
<tr>
<td>110/00 Homopolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond</td>
<td></td>
</tr>
<tr>
<td>110/02 .</td>
<td>Ethene</td>
</tr>
<tr>
<td>110/04 .</td>
<td>Monomers containing three or four carbon atoms</td>
</tr>
<tr>
<td>110/06 .</td>
<td>Propene</td>
</tr>
<tr>
<td>110/08 .</td>
<td>Butenes</td>
</tr>
<tr>
<td>110/10 .</td>
<td>Isobutene</td>
</tr>
<tr>
<td>110/14 .</td>
<td>Monomers containing five or more carbon atoms</td>
</tr>
<tr>
<td>112/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring</td>
<td></td>
</tr>
<tr>
<td>112/02 .</td>
<td>Monomers containing only one unsaturated aliphatic radical</td>
</tr>
<tr>
<td>112/04 .</td>
<td>containing one ring</td>
</tr>
<tr>
<td>112/06 .</td>
<td>Hydrocarbons</td>
</tr>
<tr>
<td>112/08 .</td>
<td>Styrene</td>
</tr>
<tr>
<td>112/12 .</td>
<td>Monomers containing a branched unsaturated aliphatic radical or a ring substituted by an alkyl radical</td>
</tr>
<tr>
<td>112/14 .</td>
<td>substituted by hetero atoms or groups containing heteroatoms</td>
</tr>
<tr>
<td>112/32 .</td>
<td>containing two or more rings</td>
</tr>
<tr>
<td>112/34 .</td>
<td>Monomers containing two or more unsaturated aliphatic radicals</td>
</tr>
<tr>
<td>112/36 .</td>
<td>Divinylbenzene</td>
</tr>
<tr>
<td>114/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen</td>
<td></td>
</tr>
<tr>
<td>114/02 .</td>
<td>Monomers containing chlorine</td>
</tr>
<tr>
<td>114/04 .</td>
<td>Monomers containing two carbon atoms</td>
</tr>
<tr>
<td>114/06 .</td>
<td>Vinyl chloride</td>
</tr>
<tr>
<td>114/08 .</td>
<td>Vinylidene chloride</td>
</tr>
<tr>
<td>114/12 .</td>
<td>1,2-Dichloroethene</td>
</tr>
<tr>
<td>114/14 .</td>
<td>Monomers containing three or more carbon atoms</td>
</tr>
<tr>
<td>114/16 .</td>
<td>Monomers containing bromine or iodine</td>
</tr>
<tr>
<td>114/18 .</td>
<td>Monomers containing fluorine</td>
</tr>
<tr>
<td>114/185 .</td>
<td>[Monomers containing fluorne not covered by the groups C08F 114/20 - C08F 114/28]</td>
</tr>
<tr>
<td>114/20 .</td>
<td>Vinyl fluoride</td>
</tr>
<tr>
<td>114/22 .</td>
<td>Vinylidene fluoride</td>
</tr>
<tr>
<td>114/24 .</td>
<td>Trifluorochloroethene</td>
</tr>
<tr>
<td>114/26 .</td>
<td>Tetrafluoroethene</td>
</tr>
<tr>
<td>114/28 .</td>
<td>Hexafluoropropene</td>
</tr>
<tr>
<td>116/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehyde, ketonic, acetal or ketal radical</td>
<td></td>
</tr>
<tr>
<td>116/02 .</td>
<td>by an alcohol radical</td>
</tr>
<tr>
<td>116/04 .</td>
<td>Acyclic compounds</td>
</tr>
<tr>
<td>116/06 .</td>
<td>. . Polyvinyl alcohol [{ Vinyl alcohol }]</td>
</tr>
<tr>
<td>116/08 .</td>
<td>Allyl alcohol</td>
</tr>
<tr>
<td>116/10 .</td>
<td>Carbocyclic compounds</td>
</tr>
<tr>
<td>116/12 .</td>
<td>by an ether radical</td>
</tr>
<tr>
<td>116/14 .</td>
<td>Monomers containing only one unsaturated aliphatic radical</td>
</tr>
<tr>
<td>116/16 .</td>
<td>. . Monomers containing no hetero atoms other than the ether oxygen</td>
</tr>
<tr>
<td>116/18 .</td>
<td>Acyclic compounds</td>
</tr>
<tr>
<td>116/20 .</td>
<td>. . . . Monomers containing three or more carbon atoms in the unsaturated aliphatic radical</td>
</tr>
<tr>
<td>116/34 .</td>
<td>by an aldehyde radical</td>
</tr>
<tr>
<td>116/36 .</td>
<td>by a ketonic radical</td>
</tr>
<tr>
<td>116/38 .</td>
<td>by a acetal or ketal radical</td>
</tr>
<tr>
<td>118/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carboxonic acid or of a haloformic acid</td>
<td></td>
</tr>
<tr>
<td>118/02 .</td>
<td>Esters of monocarboxylic acids</td>
</tr>
<tr>
<td>118/04 .</td>
<td>Vinyl esters</td>
</tr>
<tr>
<td>118/06 .</td>
<td>. . Vinyl formate</td>
</tr>
<tr>
<td>118/08 .</td>
<td>Vinyl acetate</td>
</tr>
<tr>
<td>118/10 .</td>
<td>. . . of monocarboxylic acids containing three or more carbon atoms</td>
</tr>
<tr>
<td>118/12 .</td>
<td>. with unsaturated alcohols containing three or more carbon atoms</td>
</tr>
<tr>
<td>118/14 .</td>
<td>Esters of polycarboxylic acids</td>
</tr>
<tr>
<td>118/16 .</td>
<td>. with alcohols containing three or more carbon atoms</td>
</tr>
<tr>
<td>118/18 .</td>
<td>. . . Diallyl phthalate</td>
</tr>
<tr>
<td>120/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and only one being terminated by only one carboxyl radical or a salt, anhydride, ester, amide, imide or nitrile thereof</td>
<td></td>
</tr>
<tr>
<td>120/02 .</td>
<td>Monocarboxylic acids having less than ten carbon atoms; Derivatives thereof</td>
</tr>
<tr>
<td>120/04 .</td>
<td>Acids; Metal salts or ammonium salts thereof</td>
</tr>
<tr>
<td>120/06 .</td>
<td>. . Acrylic acid; Methacrylic acid; Metal salts or ammonium salts thereof</td>
</tr>
<tr>
<td>120/08 .</td>
<td>Anhydrides</td>
</tr>
<tr>
<td>120/10 .</td>
<td>Esters</td>
</tr>
</tbody>
</table>
Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (cyclic esters of polyfunctional acids C08F 118/00; cyclic anhydrides of unsaturated acids C08F 120/00, C08F 122/00).

Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a single or double bond to nitrogen or by a heterocyclic ring containing nitrogen.

Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a bond to sulfur or by a heterocyclic ring containing sulfur.

Homopolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing phosphorus, selenium, tellurium or a metal (metal salts, e.g. phenolates or alcoholates, see the parent compounds).

Homopolymers of cyclic compounds containing no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic ring system.

Homopolymers of cyclic compounds having no unsaturated aliphatic radicals in a side chain and having one or more carbon-to-carbon double bonds in a heterocyclic ring (cyclic esters of polyfunctional acids C08F 118/00; cyclic anhydrides or imides C08F 122/00).
Homopolymers

134/02 . in a ring containing oxygen
134/04 . in a ring containing sulfur

136/00 Homopolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds (C08F 132/00 takes precedence)

NOTE

In C08F 136/00 - C08F 136/22 the method of polymerisation may be indicated using the subdivision of C08F 2/00 - C08F 2/58 in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of C08F 4/00 - C08F 4/60, C08F 4/62, C08F 4/64, C08F 4/642, C08F 4/6421, C08F 4/643 or C08F 4/68 - C08F 4/82 in the form of C-Sets.
Example: ( C08F 136/18, C08F 2/26 )

136/02 . the radical having only two carbon-to-carbon double bonds
136/04 . . conjugated
136/045 . . . [conjugated hydrocarbons other than butadiene or isoprene]
136/06 . . Butadiene
136/08 . . Isoprene
136/14 . . containing elements other than carbon and hydrogen
136/16 . . . containing halogen
136/18 . . . . containing chlorine
136/20 . . unconjugated
136/22 . the radical having three or more carbon-to-carbon double bonds

138/00 Homopolymers of compounds having one or more carbon-to-carbon triple bonds
138/02 . Acetylene
138/04 . Vinylacetylene

Copolymers

210/00 Copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond

NOTE

In C08F 210/00 - C08F 210/18 the method of polymerisation or the nature of the catalyst may be indicated using the subdivision of C08F 2/00 - C08F 2/58 or of C08F 4/00 - C08F 4/82 in the form of C-Sets.
Example: ( C08F 210/06, C08F 4/04 )

210/02 . Ethene
210/04 . Monomers containing three or four carbon atoms
210/06 . Propene
210/08 . Butenes
210/10 . Isobutene
210/12 . . . with conjugated diolefins, e.g. butyl rubber
210/14 . Monomers containing five or more carbon atoms
210/16 . Copolymers of ethene with alpha-alkenes, e.g. EP rubbers
210/18 . . with non-conjugated dienes, e.g. EPT rubbers

212/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring

NOTE

From April 2012 on, in groups C08F 212/00 - C08F 212/36 the method of polymerisation may be indicated using the subdivision of C08F 2/00 - C08F 2/60 in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of C08F 4/00 - C08F 4/82 in the form of C-Sets.
Example: ( C08F 212/08, C08F 4/16 )

212/02 . Monomers containing only one unsaturated aliphatic radical
212/04 . . containing one ring
212/06 . . . Hydrocarbons
212/08 . . . . Styrene
212/10 . . . . . with nitriles
212/12 . . . . . Monomers containing a branched unsaturated aliphatic radical or a ring substituted by an alkyl radical
212/14 . . . substituted by heteroatoms or groups containing heteroatoms
212/145 . . . . [the heteroatoms being part of ester groups derived from unsaturated acids]
212/32 . . containing two or more rings
212/34 . Monomers containing two or more unsaturated aliphatic radicals
212/36 . . . Divinylbenzene

214/00 Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a halogen

214/02 . Monomers containing chlorine
214/04 . . Monomers containing two carbon atoms
214/06 . . . Vinyl chloride
214/08 . . . Vinylidene chloride
214/10 . . . . with nitriles
214/12 . . . 1,2-Dichloroethene
214/14 . Monomers containing three or more carbon atoms
214/16 . Monomers containing bromine or iodine
214/18 . Monomers containing fluorine
214/182 . . {Monomers containing fluorine not covered by the groups C08F 214/20 - C08F 214/28 }
214/184 . . {with fluorinated vinyl ethers}
214/186 . . {with non-fluorinated comonomers}
214/188 . . . {with non-fluorinated vinyl ethers}
214/20 . . Vinyl fluoride
214/202 . . . {with fluorinated vinyl ethers}
214/205 . . . {with non-fluorinated comonomers}
214/207 . . . . {with non-fluorinated vinyl ethers}
214/22 . . Vinylidene fluoride
214/222 . . . {with fluorinated vinyl ethers}
214/225 . . . {with non-fluorinated comonomers}
214/227 . . . . {with non-fluorinated vinyl ethers}
214/24 . Trifluorochloroethene
214/242 . . {with fluorinated vinyl ethers}
214/245 . . {with non-fluorinated comonomers}
214/247 . . . {with non-fluorinated vinyl ethers}
Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an alcohol, ether, aldehydo, ketonic, acetal or ketal radical

216/02 . . . by an alcohol radical
216/04 . . . Acyclic compounds
216/06 . . . Polyvinyl alcohol (; Vinyl alcohol)
216/08 . . . Allyl alcohol
216/085 . . . . . [(Allyl alcohol alkoxylate)]
216/10 . . . Carboxyclic compounds
216/12 . . . by an ether radical
216/125 . . . [Monomers containing two or more unsaturated aliphatic radicals]
216/14 . . . Monomers containing only one unsaturated aliphatic radical
216/1408 . . . [Monomers containing halogen]
216/1416 . . . [Monomers containing oxygen in addition to the ether oxygen]
216/1425 . . . . . [Monomers containing side chains of polyether groups]
216/1433 . . . . . [Monomers containing side chains of polyethyleneoxide groups]
216/1441 . . . . . [Monomers containing side chains of polypropyleneoxide groups]
216/145 . . . . . [Monomers containing side chains of polyethylene-co-propyleneoxide groups]
216/1458 . . . . . [Monomers containing nitrogen]
216/1466 . . . . . [Monomers containing sulfur]
216/1475 . . . . . [Monomers containing sulfur and oxygen]
216/1483 . . . . . [Monomers containing sulfur and nitrogen]
216/1491 . . . . . [Monomers containing sulfur, oxygen and nitrogen]
216/16 . . . Monomers containing no hetero atoms other than the ether oxygen
216/165 . . . . . [Carboxyclic compounds]
216/18 . . . Acyclic compounds
216/20 . . . . . . Monomers containing three or more carbon atoms in the unsaturated aliphatic radical
216/34 . . . by an aldehydo radical
216/36 . . . by a ketonic radical
216/38 . . . by an acetal or ketal radical

Copolymers having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by an acyloxy radical of a saturated carboxylic acid, of carbonic acid or of a haloformic acid

218/02 . . . Esters of monocarboxylic acids
218/04 . . . Vinyl esters
218/06 . . . Vinyl formate
218/08 . . . Vinyl acetate
218/10 . . . . . of monocarboxylic acids containing three or more carbon atoms
218/12 . . . . . of unsaturated alcohols containing three or more carbon atoms
218/14 . . . . . Esters of polycarboxylic acids
218/16 . . . . . with alcohols containing three or more carbon atoms
218/18 . . . . . Diallyl phthalate
218/20 . . . . . [Esters containing halogen]
218/22 . . . . . [Esters containing nitrogen]
218/24 . . . . . [Esters of carboxylic or haloformic acids]
218/245 . . . . . [Esters of carboxonic or haloformic acids, e.g. allyl carbonate]
Copolymers

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>222/00</td>
<td>Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one being terminated by a carboxylic radical and containing at least one other carboxylic radical in the molecule; Salts, anhydrides, esters, amides, imides, or nitriles thereof</td>
</tr>
<tr>
<td>222/02</td>
<td>Acids; Metal salts or ammonium salts thereof</td>
</tr>
<tr>
<td>222/04</td>
<td>Anhydrides, e.g. cyclic anhydrides</td>
</tr>
</tbody>
</table>

222/06 | Maleic anhydride |
222/08 | with vinyl aromatic monomers |
222/10 | Esters |
222/1006 | [of polyhydric alcohols or polyhydric phenols, e.g. ethylene glycol dimethacrylat] |
222/1013 | [of dialcohols] |
222/1012 | [of aromatic dialcohols] |
222/1026 | [of trialcohols] |
222/1033 | [of aromatic trialcohols] |
222/104 | [of tetraalcohols] |
222/1046 | [of aromatic tetraalcohols] |
222/1053 | [of pentaalcohols] |
222/106 | [of aromatic pentaalcohols] |
222/1066 | [Esters of polycondensation macromers] |
222/1073 | [of alcohol terminated polyesters or polycarbonates] |
222/108 | [of alcohol terminated polyethers] |
222/1086 | [of alcohol terminated (poly)urethanes] |
222/1093 | [of alcohol terminated epoxy functional polymers] |
222/12 | [of phenols or saturated alcohols] |
222/14 | Esters having no free carboxylic acid groups |
222/145 | [the ester chains containing seven or more carbon atoms] |
222/16 | Esters having free carboxylic acid groups |
222/165 | [the ester chains containing seven or more carbon atoms] |
222/18 | Esters containing halogen |
222/185 | [the ester chains containing seven or more carbon atoms] |
222/20 | Esters containing oxygen in addition to the carboxy oxygen |
222/205 | [the ester chains containing seven or more carbon atoms] |
222/22 | Esters containing nitrogen |
222/225 | [the ester chains containing seven or more carbon atoms] |
222/24 | Esters containing sulfur |
222/245 | [the ester chains containing seven or more carbon atoms] |
222/26 | [of unsaturated alcohols] |
222/28 | Diallyl maleate |
222/30 | Nitriles |
222/32 | Alpha-cyano-acrylic acid; Esters thereof |
222/321 | [alpha-Cyano-acrylic acid methyl ester] |
222/322 | [alpha-Cyano-acrylic acid ethyl ester] |
222/323 | [alpha-Cyano-acrylic acid propyl ester] |
222/324 | [alpha-Cyano-acrylic acid butyl ester] |
222/325 | [alpha-Cyano-acrylic acid pentyl ester] |
222/326 | [alpha-Cyano-acrylic acid longer chain ester] |
222/327 | [alpha-Cyano-acrylic acid alkoxy ester] |
222/328 | [alpha-Cyano-acrylic acid with more than one oxygen in the ester moiety] |
222/34 | Vinylidene cyanide |
222/36 | Amides or imides |
222/38 | Amides |
222/385 | [Monomers containing two or more (meth)acrylamide groups, e.g. N,N'-methylenebisacrylamide] |
222/40 | Imides, e.g. cyclic imides |
222/402 | [Alkyl substituted imides] |
Copolymers of compounds having one or more unsaturated aliphatic radicals, each having one carbon-to-carbon double bond, and at least one being terminated by a heterocyclic ring containing oxygen (cyclic esters of polyfunctional acids C08F 218/00; cyclic anhydrides of unsaturated acids C08F 220/00, C08F 222/00)

Copolymers of compounds having one or more unsaturated aliphatic radicals, each having one carbon-to-carbon double bond, and containing germanium

Copolymers of compounds having one or more unsaturated aliphatic radicals, each having one carbon-to-carbon double bond, and containing silicon

Copolymers of compounds having one or more unsaturated aliphatic radicals, each having one carbon-to-carbon double bond, and containing boron

Copolymers of compounds having one or more unsaturated aliphatic radicals, each having one carbon-to-carbon double bond, and containing elements other than carbon and hydrogen

Copolymers of compounds having one or more unsaturated aliphatic radicals, each having one carbon-to-carbon double bond, and containing nitrogen

Copolymers of compounds having one or more unsaturated aliphatic radicals, each having one carbon-to-carbon double bond, and containing phosphorus, selenium, tellurium or a metal (metal salts, e.g. phenolates or alcoholates, see the parent compounds)

Copolymers of cyclic compounds containing no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic ring system

Copolymers of cycloaliphatic compounds with one or more unsaturated carbon-carbon bonds in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic ring system
Macromolecular compounds obtained by polymerising monomers on to polymers of unsaturated monocarboxylic acids or derivatives thereof as defined in group **C08F 20/00**

- on to polymers of acids, salts or anhydrides
- on to polymers of esters
- Polymerisation of acrylate or methacrylate esters on to polymers thereof

**NOTE**
In C08F 265/06 the method of polymerisation may be indicated using the subdivision of C08F 2/02, C08F 2/16, C08F 2/18 or C08F 2/22 in the form of C-Sets. Example: (C08F 265/06, C08F 2/16)

Macromolecular compounds obtained by polymerising monomers on to polymers of unsaturated polycarboxylic acids or derivatives thereof as defined in group **C08F 22/00**

- on polymers of acids or salts
- on polymers of esters
- on polymers of nitriles
- on polymers of amides or imides

Macromolecular compounds obtained by polymerising monomers on to polymers of heterocyclic oxygen-containing monomers as defined in group **C08F 24/00**

Macromolecular compounds obtained by polymerising monomers on to polymers of nitrogen-containing monomers as defined in group **C08F 26/00**

- on polymers of monomers containing heterocyclic nitrogen

Macromolecular compounds obtained by polymerising monomers on to polymers of sulfur-containing monomers as defined in group **C08F 28/00**

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers containing phosphorus, selenium, tellurium or a metal as defined in group **C08F 30/00**

Macromolecular compounds obtained by polymerising monomers on to polymers of carbocyclic or heterocyclic monomers as defined respectively in group **C08F 32/00** or in group **C08F 34/00**

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers having two or more carbon-to-carbon double bonds as defined in group **C08F 36/00**

**NOTE**
In C08F 279/02 and C08F 279/04 the method of polymerisation may be indicated using the subdivision of C08F 2/02, C08F 2/16, C08F 2/18.
Macromolecular compounds obtained by polymerising monomers on to polymers of monomers having carbon-to-carbon triple bonds as defined in group C08F 283/00

Macromolecular compounds obtained by polymerising monomers on to polymers provided for in subclass C08G {on to polymers modified by introduction of aliphatic unsaturated end or side groups C08F 290/00)

Macromolecular compounds obtained by polymerising monomers on to block polymers {C08F 283/004 takes precedence)}

Macromolecular compounds obtained by polymerising monomers on to preformed graft polymers ((C08F 283/00 takes precedence)

NOTE

After the symbol of group C08F 283/01 - C08F 283/14 and using the C-Sets, notations concerning the method of polymerisation or the nature of the catalyst can be indicated. These notations are selected from groups C08F 2/00, C08F 2/16, C08F 2/46, C08F 2/48, C08F 2/50, C08F 4/00, C08F 4/04, C08F 4/06, C08F 4/28 and C08F 4/42. Example: (C08F 283/01.C08F 2/16)

on to polycarbonates or saturated polyesters ((C08F 283/004 takes precedence))

on to polycarbonates or polyesters ((C08F 283/004 takes precedence))

on to unsaturated side groups

on to unsaturated end groups

on to preformed graft polymers {C08F 283/004 takes precedence)}

{Polyesters; Polycarbonates}

{Polymers of hydrocarbons as defined in group C08F 10/00)

{Polymers of aromatic monomers as defined in group C08F 12/00)

{Polymers of unsaturated carboxylic acids or derivatives thereof}

{Polymers of monomers having two or more carbon-to-carbon double bonds as defined in group C08F 36/00)

{Polymers provided for in subclass C08G}

{Polymers containing more than one epoxy group per molecule}

{Polymides; Polyetherimides; Polyimides}

{Polyurethanes; Polyureas}

{Polyisoxazoles}

on to polymers modified by introduction of unsaturated side groups

{Polyesters; Polycarbonates}

{Polymers containing more than one epoxy group per molecule}

{Polymers of hydrocarbons as defined in group C08F 10/00)

{Polymers of aromatic monomers as defined in group C08F 12/00)

{Polymers of unsaturated carboxylic acids or derivatives thereof}

{Polymers of monomers having two or more carbon-to-carbon double bonds as defined in group C08F 36/00)

{Polymers containing more than one epoxy group per molecule}
Graft polymers; Polymers crosslinked with unsaturated monomers

290/145 . . . [Polyamides; Polyesteramides; Polyimides]
290/147 . . . [Polyurethanes; Polyureas]
290/148 . . . [Polysiloxanes]

291/00 Macromolecular compounds obtained by polymerising monomers on to macromolecular compounds according to more than one of the groups C08F 251/00 - C08F 289/00

NOTE:
In C08F 291/00 the method of polymerisation may be indicated using the subdivision of C08F 2/02, C08F 2/16, C08F 2/18 or C08F 2/22 in the form of C-Sets. Example: ( C08F 291/00, C08F 2/16 )

291/02 . on to elastomers
291/04 . on to halogen-containing macromolecules
291/06 . on to oxygen-containing macromolecules
291/08 . on to macromolecules containing hydroxy radicals
291/10 . on to macromolecules containing epoxy radicals
291/12 . on to nitrogen-containing macromolecules
291/14 . on to sulfur-containing macromolecules
291/16 . on to macromolecules containing more than two metal atoms
291/18 . on to irradiated or oxidised macromolecules (epoxidised C08F 291/10)
291/185 . {The monomer(s) not being present during the irradiation or the oxidation of the macromolecule}

292/00 Macromolecular compounds obtained by polymerising monomers on to inorganic materials

Block polymers

293/00 Macromolecular compounds obtained by polymerisation on to a macromolecule having groups capable of inducing the formation of new polymer chains bound exclusively at one or both ends of the starting macromolecule (on to polymers modified by introduction of unsaturated end groups C08F 290/02)
293/005 . (using free radical "living" or "controlled" polymerisation, e.g. using a complexing agent)

295/00 Macromolecular compounds obtained by polymerisation using successively different catalyst types without deactivating the intermediate polymer

297/00 Macromolecular compounds obtained by successively polymerising different monomer systems using a catalyst of the ionic or coordination type without deactivating the intermediate polymer
297/02 . using a catalyst of the anionic type
297/023 . . . [a coupling agent]
297/026 . . . [polymerising acrylic acid, methacrylic acid or derivatives thereof]
297/04 . . . polymerising vinyl aromatic monomers and conjugated dienes
297/042 . . . [using a polyfunctional initiator]
297/044 . . . [using a coupling agent]
297/046 . . . [polymerising vinyl aromatic monomers and isoprene, optionally with other conjugated dienes]

297/048 . . . [polymerising vinyl aromatic monomers, conjugated dienes and polar monomers]
297/06 . using a catalyst of the coordination type
297/08 . . . polymerising mono-olefins
297/083 . . . [the monomers being ethylene or propylene]
297/086 . . . . . [the block polymer contains at least three blocks]

299/00 Macromolecular compounds obtained by interreacting polymers involving only carbon-to-carbon unsaturated bond reactions, in the absence of non-macromolecular monomers (in the presence of non-macromolecular monomers C08F 251/00 - C08F 291/00; involving other reactions C08G 81/00)
299/02 . from unsaturated polycondensates
299/022 . . . [from polycondensates with side or terminal unsaturations]
299/024 . . . [the unsaturation being in acrylic or methacrylic groups]
299/026 . . . [from the reaction products of polyepoxides and unsaturated monocarboxylic acids, their anhydrides, halogenides or esters with low molecular weight]
299/028 . . . . . [photopolymerisable compositions]
299/04 . . . from polyesters
299/0407 . . . [Processes of polymerisation]
299/0414 . . . . . [Suspension or emulsion polymerisation]
299/0421 . . . . . [Polymerisation initiated by wave energy or particle radiation]
299/0428 . . . . . . [by ultra-violet or visible light]
299/0435 . . . . . . [with sensitising agents]
299/0442 . . . . . . [Catalysts]
299/045 . . . . . . . [Peroxy-compounds]
299/0457 . . . . . . . [Nitrogen containing compounds]
299/0464 . . . . . . . [Metals or metal containing compounds]
299/0471 . . . . . . . [Other compounds]
299/0478 . . . . . . . [Copolymers from unsaturated polyesters and low molecular monomers characterised by the monomers used]
299/0485 . . . . . . [from polyesters with side or terminal unsaturations]
299/0492 . . . . . . [the unsaturation being in acrylic or methacrylic groups]
299/06 . . . from polyurethanes
299/065 . . . [from polyurethanes with side or terminal unsaturations]
299/08 . . . . . . [from polysiloxanes]

301/00 Macromolecular compounds not provided for in groups C08F 10/00 - C08F 299/00

2400/00 Characteristics for processes of polymerization
2400/02 . Control or adjustment of polymerization parameters
2410/00 Catalyst preparation (not used)
2410/01 . Additive used together with the catalyst, excluding compounds containing Al or B
2410/02 . Anti-static agent incorporated into the catalyst
2410/03 . Multinuclear procatalyst, i.e. containing two or more metals, being different or not
2410/04 . Dual catalyst, i.e. use of two different catalysts, where none of the catalysts is a metalocene
2410/05  Transitioning, i.e. transition from one catalyst to another with use of a deactivating agent

2420/00  **Metallocene catalysts (not used)**
- Cp or analog bridged to a non-Cp X neutral donor
- Cp or analog bridged to a non-Cp X anionic donor
- Cp or analog not bridged to a non-Cp X ancillary neutral donor
- Cp or analog not bridged to a non-Cp X ancillary anionic donor
- Cp or analog where at least one of the carbon atoms of the Cp ring is replaced by a heteroatom

2438/00  **Living radical polymerisation**
- Atom Transfer Radical Polymerization [ATRP] or reverse ATRP
- Stable Free Radical Polymerisation [SFRP]; Nitroxide Mediated Polymerisation [NMP] for, e.g. using 2,2,6,6-tetramethylpiperidine-1-oxyl [TEMPO]
- Use of a di- or tri-thiocarbonylthio compound, e.g. di- or tri-thioester, di- or tri-thiocarbamate, or a xanthate as chain transfer agent, e.g. Reversible Addition Fragmentation chain Transfer [RAFT] or Macromolecular Design via Interchange of Xanlates [MADIX]

2500/00  **Characteristics or properties of obtained polymers; Use thereof (not used)**
- High molecular weight
- Low molecular weight
- Narrow molecular weight distribution
- Broad molecular weight distribution
- Bimodal or multimodal molecular weight distribution
- Narrow composition distribution
- High density
- Low density
- Long chain branches
- Short chain branches
- Melt tension or melt strength
- Melt flow index or melt flow ratio
- Environmental stress cracking resistance
- Die swell or die swell ratio or swell ratio
- Isotactic
- Syndiotactic
- Viscosity
- Bulk density
- Shear ratio or shear ratio index
- Activation energy or enthalpy
- Rubbery or elastomeric properties
- Sticky polymer
- Waxy properties
- Polymer with special particle form or size
- Cycloolefine
- Use as polymer for film forming

2800/00  **Copolymer characterised by the proportions of the comonomers expressed (not used)**
- as molar percentages
- as weight or mass percentages

2810/00  **Chemical modification of a polymer (not used)**
- including a reactive processing step which leads, inter alia, to morphological and/or rheological modifications, e.g. visbreaking
- leading to a crosslinking, either explicitly or inherently
- leading to the formation or introduction of aliphatic or alicyclic unsaturated groups
- taking place solely at one end or both ends of the polymer backbone, i.e. not in the side or lateral chains
- wherein the polymer is a copolymer and the modification is taking place only on one or more of the monomers present in minority