

C08F

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

Definition statement

This place covers:

Homopolymers and copolymers of compounds having one or more unsaturated radicals, each having one or more carbon-to-carbon unsaturated bonds and optionally other functional groups such as aromatic rings, triple bonds, halogens, carboxylic acid, ester or anhydride groups, groups containing nitrogen or other heteroatoms such as Si, S, B or P. These polymers are also known as addition polymers.

The above polymers include polyethylene, polypropylene, polybutene, polymers of vinyl chloride, vinyl acetate or vinyl pyrrolidone, styrene or divinylbenzene, polyacrylates, polymethacrylates, butadiene or isoprene polymers, allyl polymers, acrylonitrile polymers, maleic anhydride polymers, vinylidene polymers, tetrafluoroethylene polymers and many others including those in the "Synonyms" section below.

Other specific polymers such as copolymers of hydrocarbons and mineral oils, petroleum resins, terpene resins, copolymers of drying oils with other monomers or coumarone-indene copolymers.

Graft polymers are considered to be macromolecular compounds obtained by polymerising monomers containing at least one ethylenically unsaturated aliphatic radicals on to or in the presence of preformed polymeric compounds.

Block polymers.

Other types of polymer formed via carbon-to-carbon unsaturated bonds, e.g. by inter-reacting polymers involving only carbon-to-carbon unsaturated bond in the absence of non-macromolecular monomers.

Polymerisation processes, in bulk, in solution, in suspension, in emulsion, in gaseous or solid state, using regulators (e.g. chain terminators, retarders or short-stopping agents), in presence of compounding ingredients, or initiated by wave energy, particle radiation or electric current; including processes of polymerisation characterized by special features of the polymerisation apparatus used.

Polymerisation initiators or catalysts, e.g. Ziegler-Natta, anionic, cationic, redox or transition metal initiators or initiators for radiation polymerisation, or metallocenes.

Post-polymerisation treatments of the above types of polymer (but not of rubbers) including purification, catalyst removal and separating polymers from non-polymers; but see "Relationships" section below for overlaps with subclass [C08J](#).

Chemical modification of the above types of polymer (but not of rubbers) by after-treatment, e.g. oxidation, reduction, epoxidation, hydrolysis, halogenation or dehalogenation, sulfonation, cyclisation or partial depolymerisation.

Relationships with other classification places

Relationship with other subclasses of classes [C08](#) and [C09](#):

Polysaccharides and their derivatives are classified in subclass [C08B](#).

Treatment and chemical modification of rubbers, including conjugated diene rubbers, are classified in subclass [C08C](#) – however synthesis of rubbers and treatment or chemical modification of non-conjugated diene-rubbers covered per se in this subclass ([C08F](#)) are classified in this subclass ([C08F](#)).

Macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds (usually known as condensation polymers) are classified in subclass [C08G](#). This includes unsaturated polyesters, polyamides or polyurethanes, silicone-type polymers with unsaturated groups and block polymers formed by interreacting polymers in the absence of monomers, as long as the mechanism for reaction is of [C08G](#) type.

Derivatives of natural macromolecular polymers, e.g. derived from proteins or vulcanised oils, are classified in subclass [C08H](#).

Working-up, general processes of compounding and after-treatment not covered by this subclass are classified in subclass [C08J](#). These include making solutions, dispersions etc., plasticising, compounding with additives, e.g. colouring or masterbatching, crosslinking, manufacture of articles or shaped materials, chemical treatment or coating of such articles, making porous, cellular or foamed materials, and recovery or working up of waste materials.

Use or choice of inorganic or non-macromolecular organic materials as compounding agents are classified in subclass [C08K](#).

Compositions of macromolecular compounds, either with other macromolecular compounds or with other ingredients, including compositions of polysaccharides, rubbers or natural macromolecular compounds, are classified in subclass [C08L](#).

Coating compositions and other polymer compositions for similar uses, e.g. paints, inks, woodstains and printing pastes, are classified in subclass [C09D](#).

Adhesives and adhesive processes are classified in subclass [C09J](#).

Materials for applications not otherwise provided for, or applications of materials not otherwise provided for, are classified in subclass [C09K](#). These include sealing or anti-slip materials, heat-transfer, heat-exchange or heat-storage materials, drilling compositions, luminescent or tenebrescent materials, etching, surface-brightening or pickling materials, antioxidant materials, soil-conditioning or soil-stabilising materials, liquid crystal or fireproofing materials.

Subclasses [C08B-C08L](#) are generally function-oriented subclasses in relation to the polymers they cover, while [C09D-C09K](#) are application-oriented subclasses in relation to the said polymers.

Multiple classification

Biocidal, pest-repellant, pest-attractant or plant growth regulatory activity of compounds or preparations is further classified in subclass [A01N](#).

Processes using enzymes or microorganisms in order

to liberate, separate or purify a pre-existing compound or composition, or

to treat textiles or clean solid surfaces of materials,

are further classified in subclass [C12R](#).

Therapeutic activity of chemical compounds or medicinal preparations is further classified in subclass [A61P](#) (as secondary classification).

The use of cosmetics or similar toilet preparations is further classified in subclass [A61Q](#).

The preparation for medical, dental or toilet purposes is classified in [A61K](#).

References

Limiting references

This place does not cover:

Preparation of hydrocarbons from hydrocarbons containing a smaller number of carbon atoms (e.g. oligomerization).	C07C 2/00
Preparation of hydrocarbons from hydrocarbons containing the same number of carbon atoms.	C07C 5/00
Production of liquid hydrocarbon mixtures from lower carbon number hydrocarbons, e.g. by oligomerisation for lubricating purposes	C10G 50/00
Production of polymers using enzymes containing carbon-to carbon unsaturated bonds.	C12P
Graft polymerization of monomers on to fibres, threads, yarns, fabrics or fibrous goods made from such materials.	D06M 14/00

Please see the relevant part in IPC Definitions

Informative references

Attention is drawn to the following places, which may be of interest for search:

Catalysts in general (other than polymerisation catalysts)	B01J
Chemical apparatus	B01J , B01L
Layered products	B32B

Special rules of classification

In this subclass, boron and silicon are considered as metals.

In this subclass, in the absence of an indication to the contrary, a catalyst or polymer is classified in the last appropriate place.

In a copolymer, the monomer in majority is given an Indexing Code and the monomer(s) in minority are given Indexing Code(s) in the form of a Combination set. The Indexing Codes are linked. The monomer in majority is always indicated first in the Combination set.

Example: a copolymer having ethylene in majority and styrene in minority is classified in ([C08F 210/02](#), [C08F 212/08](#)).

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 the groups for the processes employed ([C08F 2/00-C08F 8/00](#)).

Processes for the preparation of macromolecular compounds are also classified in the groups for the types of reactions employed, if of interest.

Subject matter relating to both homopolymers and copolymers is classified in groups [C08F 10/00-C08F 38/00](#).

Subject matter limited to homopolymers is classified only in groups [C08F 110/00-C08F 138/00](#).

Subject matter limited to copolymers is classified only in groups [C08F 210/00-C08F 246/00](#).

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.

This subclass also covers compositions based on monomers which form macromolecular compounds classifiable in this subclass (paints [C09D 4/00](#), adhesives [C09J 4/00](#)).

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; or 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;

If the presence of compounding ingredients is of interest, classification is made in group [C08F 2/44](#) (sensitizing agents [C08F 2/50](#), catalysts [C08F 4/00](#));

If the compounding ingredients are of interest per se, classification is also made in subclass [C08K](#).

Multiple classification

The following multiple classification rules apply in this subclass:

In this subclass, multiple classification may be applied, if appropriate, e.g. for the polymer, the catalyst and/or the process. However, care should be taken that only aspects which contribute to the invention are classified.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Addition polymers	Polymers in which unsaturated monomer molecules join together to form a polymer in which the molecular formula of the repeat unit is identical (except for the double bond) with that of the monomer.
Aliphatic radical	Means an acyclic or non-aromatic carbocyclic carbon skeleton which is 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 or; c) an aromatic carbocyclic ring or a heterocyclic ring. $\text{CH}_2=\text{CH}-\text{O}-\text{CH}_2-\text{CH}_2-\text{NH}-\text{COO}-\text{CH}_2-\text{CH}_2-\text{OH}$ are classified in group C08F 16/28 ; $\text{CH}_2=\text{CH}-\text{CO}-\text{CH}=\text{CH}_2$ are classified in group C08F 16/36 ; $\text{CH}_2=\text{CH}-\text{C}_6\text{H}_4-\text{Cl}$ are classified in group C08F 12/18 .
Block polymers	Polymers formed by polymerization of monomers on to a macromolecule having groups capable of inducing the formation of new polymer chains bound at one or both ends of the starting macromolecule, or by polymerization using successively different catalyst types or successively different monomer systems without deactivating the intermediate polymer.
Condensation polymers	Polymers in which water or some other simple molecule is eliminated from two or more monomer molecules as they combine to form the polymer or crosslinks between polymer chains. These polymers are generally in subclass C08G .
Copolymers	Usually denotes polymers of two chemically distinct monomers, and sometimes denotes polymers containing more than two types of monomer unit.

Graft polymers	Macromolecular compounds obtained by polymerizing monomers on to preformed polymers or on to inorganic materials. Such preformed polymers could be rubbers, polysaccharides, condensation polymers, homopolymers or copolymers of the addition polymer type. If groups other than ethylenically unsaturated bonds are involved in the reaction, like heteroatoms-containing groups, then the reaction is not an addition polymerisation. It is considered to be a chemical modification in the sense of C08F 8/00 and the product obtained is not a graft polymer according to C08F . It is to be noted that, however, the products obtained by a coupling reaction as defined in C08G 81/00 are also called graft polymers. Classifiers should bear this distinction in mind.
Homopolymers	Polymers resulting from the polymerisation of one species of (real, implicit or hypothetically) monomers or polymers with a single type of repeating unit.
Repeat(ing) unit	The unit in an addition polymer which is repeated throughout the molecule; for example in polyethylene the repeat unit is: -CH ₂ -CH ₂ -.

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

ABS	Acrylonitrile-butadiene-styrene copolymer
AIBN	2,2'-Azobisisobutyronitrile (initiator)
AMMA	Acrylonitrile-methylmethacrylate copolymer
AMPS	Acrylamidomethylpropanesulfonic acid
BR	Butadiene rubber
CTFE	Chloro-trifluoroethylene
DVB	Divinyl benzene
EAA	Ethylene-acrylic acid copolymer
EPDM	Ethylene-propylene-diene-monomer
EPR	Ethylene-propylene rubber
EVOH	Ethylene-vinyl alcohol copolymer
HDPE	High-density polyethylene
HEMA	Hydroxyethyl methacrylate
LDPE	Low-density polyethylene
LLDPE	Linear low-density polyethylene
NR	natural rubber
PAN	Polyacrylonitrile
PE	Polyethylene
PMMA	Poly(methyl methacrylate)
PP	Polypropylene
PS	Polystyrene
PTFE	Polytetrafluoroethylene

PVA	Poly(vinyl alcohol) or poly(vinyl acetate)
PVAC	Poly(vinyl acetate)
PVC	Poly(vinyl chloride)
PVOH	Poly(vinyl alcohol)
PVP	Poly(vinyl pyrrolidone)
SAN	Styrene-acrylonitrile copolymer
SBR	Styrene-butadiene rubber
SBS	Styrene-butadiene-styrene block polymer
SIS	Styrene-isoprene styrene block polymer-
TAC	Triallyl cyanurate

C08F 2/00

Processes of polymerisation

Definition statement

This place covers:

In [C08F 2/00](#) or subgroups, only polymerization processes are classified which result in addition polymers, which fall within the definition of the [C08F](#) main groups.

Relationships with other classification places

In [C08F 2/44](#), polymerization processes in the presence of compounding agents are classified. These compounding agents are not other polymers. In such a case, classification in [C08L](#) or [C08F 251/00](#) - [C08F 292/00](#) would be appropriate.

Crosslinked polymers are classified in [C08F 8/00](#) or [C08J 3/24](#), but also may be classified only in the group for the polymer as such.

References

Limiting references

This place does not cover:

Crosslinking	C08F 8/00 , C08J 3/24
Polymerization processes resulting in condensation polymers; Crosslinking or curing of preformed polymers.	C08G

Informative references

Attention is drawn to the following places, which may be of interest for search:

Polymerization processes which are conducted at high temperatures and in solution	C08F 2/04 - C08F 2/10
Radical polymerization processes according to the RAFT (Reversible Addition Fragmentation chain Transfer) or ATRP (Atom Transfer Radical Polymerisation) mechanism	C08F 2/38 , C08F 2438/00 - C08F 2438/03

Special rules of classification

Although every polymerization is conducted according to a process and using a catalyst, in [C08F 2/00](#) or subgroups, only documents are classified which disclose the polymerization process as the invention or as a characterizing feature of the invention.

Groups [C08F 2/00](#) or subgroups can be incomplete according to the following classification rules:

(1) If a process of polymerization is specifically used for only one type of polymer, it is classified in [C08F 2/00](#) or subgroups using a Combination set, e.g. ([C08F 34/04](#), [C08F 2/14](#)) if a note in the corresponding polymer group allows it.

However, if a process is used for several types of polymer (e.g. poly(acrylate) and polyethylene), then a class [C08F 2/00](#) or subgroups thereof is given without using the Combinaton set format.

(2) In the groups [C08F 10/00](#), [C08F 110/00](#) and [C08F 210/00](#) or sub groups, all symbols of [C08F 2/00](#) - [C08F 2/60](#) may be used.

(3) In [C08F 2/00](#) - [C08F 2/60](#), the last place rule is only applied starting from the two dots level.

(4) In the subgroups [C08F 2/18](#) - [C08F 2/30](#), it should be precisely distinguished between suspension polymerization and emulsion polymerization. If a water soluble catalyst system is used, the polymerization is conducted as an emulsion polymerization ([C08F 2/22](#)). If the invention lies in the emulsifying agent, the document is classified in the groups [C08F 2/24](#) - [C08F 2/30](#)

In [C08F 2/00](#) and [C08F 2/001](#), an additional Indexing Code [C08F 2400/02](#) is added, unlinked or as a Combination set, if the invention relates to control or adjustment of polymerization parameters.

Further subdivisions:

In the sub groups [C08F 2/46](#) - [C08F 2/60](#), only polymerization processes involving ethylenically unsaturated monomers are classified, not crosslinking of preformed polymers.

C08F 4/00

Polymerisation catalysts (catalysts in general [B01J](#))

Definition statement

This place covers:

Polymerisation catalysts and co-catalysts, which are used for the polymerisation of unsaturated monomers.

In [C08F 4/00](#) or subgroups, only polymerisation catalysts and co-catalysts are classified which form addition polymers, which fall within the definition of the [C08F](#) main groups.

Attention is drawn to the definitions of groups of chemical elements according to section [C](#) in IPC, which are important for the classification in [C08F 4/00](#) or subgroups (see also Special Rules below).

Relationships with other classification places

Post-polymerisation treatments: ([C08F 6/00](#), [C08L 23/00](#)) - ([C08F 6/00](#), [C08L 57/12](#))

Catalysts comprising the elements, oxides, or hydroxides of magnesium, boron, aluminium, carbon, silicon, titanium, zirconium, or hafnium: [B01J 21/00](#)

Catalysts comprising metals or metal oxides or hydroxides, not provided for in group [B01J 21/00](#): [B01J 23/00](#)

Catalysts comprising the elements or compounds of halogens, sulfur, selenium, tellurium, phosphorus or nitrogen; Catalysts comprising carbon compounds: [B01J 27/00](#)

Catalysts comprising molecular sieves: [B01J 29/00](#)

Catalysts comprising hydrides, coordination complexes or organic compounds: [B01J 31/00](#)

Specific uses of nanostructures : [B82Y 30/00](#)

Organic compounds used for making ligands (of metal complexes): [C07C](#) - [C07F](#)

Oligomerisation: [C07C 2/00](#), [C07C 4/00](#), [C07C 5/00](#)

Acyclic, carbocyclic, or heterocyclic compounds containing elements other than carbon, hydrogen, halogen, oxygen, nitrogen, sulfur, selenium, or tellurium: [C07F](#)

Metallocenes: [C07F 17/00](#)

Polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds ([C08F](#) polymers): [C08F 10/00](#) - [C08F 299/08](#)

Block copolymers: [C08F 293/00](#) - [C08F 297/086](#)

Nanoparticles: [C08J 5/005](#)

Compositions of [C08F](#) polymers: [C08L 9/00](#) - [C08L 57/12](#)

Combinatorial chemistry: [C40B 10/00](#)- [C40B 99/00](#)

References

Limiting references

This place does not cover:

Photopolymerisation initiators	C08F 2/50
Polymerisation catalysts used in polymerisation resulting in condensation polymers	C08G

Informative references

Attention is drawn to the following places, which may be of interest for search:

Polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds (C08F polymers)	C08F 10/00 - C08F 299/08
Catalysts in general (other than polymerisation catalysts)	B01J
Specific uses of nanostructures	B82Y 30/00
Organic compounds used for making ligands (of metal complexes)	C07C - C07F
Oligomerisation	C07C 2/00 , C07C 4/00 , C07C 5/00
Nanoparticles	C08J 5/005
Compositions of C08F polymers	C08L 9/00 - C08L 57/12
Combinatorial chemistry	C40B 10/00 - C40B 99/00

Special rules of classification

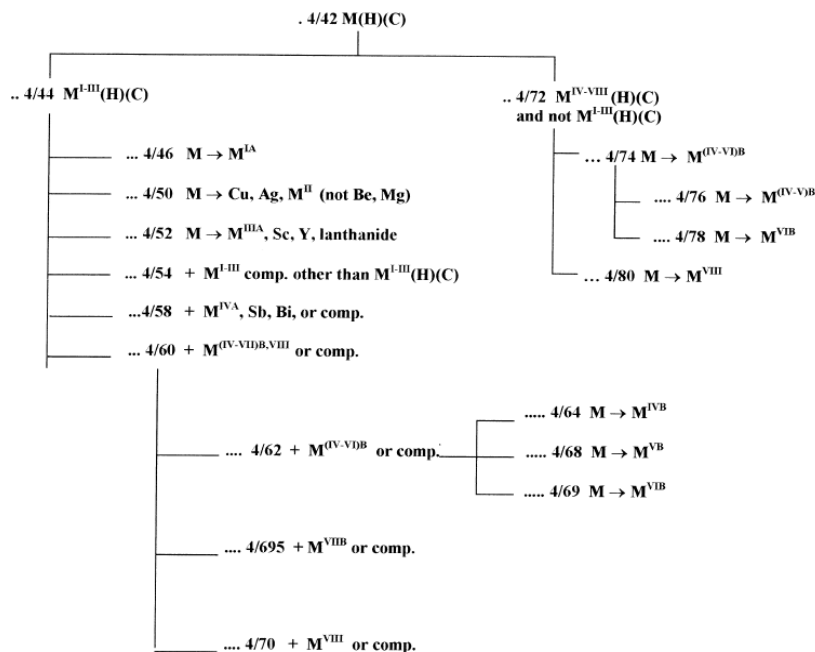
Definitions of groups of chemical elements according to section [C](#) in IPC:

Alkali metals: Li, Na, K, Rb, Cs, Fr
Alkaline earth metals: Ca, Sr, Ba, Ra
Lanthanides: elements with atomic numbers 57 to 71 inclusive
Rare earths: Sc, Y, Lanthanides
Actinides: elements with atomic

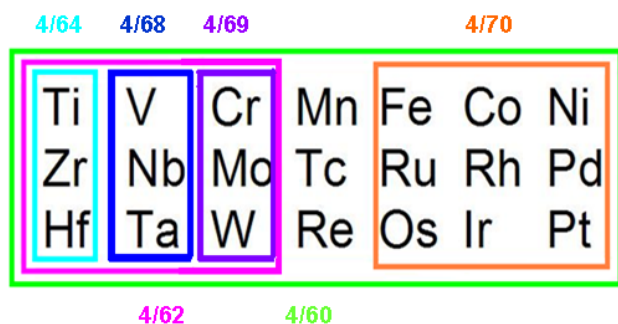
numbers 89 to 103 inclusive
 Refractory metals: Ti, V, Cr, Zr, Nb, Mo, Hf, Ta, W
 Halogens: F, Cl, Br, I, At
 Noble gases: He, Ne, Ar, Kr, Xe, Rn
 Platinum group: Os, Ir, Pt, Ru, Rh, Pd
 Noble metals: Ag, Au, Platinum group
 Light metals: alkali metals, alkaline earth metals, Be, Al, Mg
 Heavy metals: metals other than light metals
 Iron group: Fe, Co, Ni
 Non-metals: H, B, C, Si, N, P, O, S, Se, Te, noble gases, halogens
 Metals: elements other than non-metals
 Transition elements: elements with atomic numbers 21 to 30 inclusive, 39 to 48 inclusive, 57 to 80 inclusive, 89 upwards

In this subclass, Boron and Silicon are considered as metals.

The subdivision of the metals into the different subgroups of [C08F 4/00](#) can be represented as follows:



In [C08F 4/60](#) - [C08F 4/70](#) the different metal compounds are classified according to the following scheme:



[C08F 4/60](#): Ti, V, Cr, Mn, Fe, Co, Ni, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Hf, Ta, W, Re, Os, Ir, Pt

[C08F 4/62](#): Ti, V, Cr, Zr, Nb, Mo, Hf, Ta, W

[C08F 4/64](#): Ti, Zr, Hf

[C08F 4/68](#): V, Nb, Ta

[C08F 4/69](#): Cr, Mo, W

[C08F 4/70](#): Fe,Co,Ni,Ru,, Rh,Pd,Os,Ir,Pt

Although every polymerisation is conducted according to a process and using a catalyst, in [C08F 4/00](#) or subgroups, only documents are classified which disclose the polymerisation catalyst as the invention or as an essential feature of the invention.

Within the group [C08F 4/00](#), multiple classification is possible, e.g. when the invention lies in the combination of features belonging to different subgroups. As an example, the subgroups [C08F 4/02](#) (support) should be mentioned. Documents classified therein are often also classified at further places (e.g. if specific information about the support (metal oxide) is given for a titanium procatalyst comprising also an organic internal electron donor, both [C08F 4/025](#) and [C08F 4/651](#) are attributed)).

In the group [C08F 4/00](#) or subgroups, the last place rule is only applied within subgroups having the same number of dots.

If the catalyst is specifically used for only one type of polymer, it is not classified in [C08F 4/00](#) or subgroups.

The classification symbol of [C08F 4/00](#) providing for the catalyst may be used as a symbol for a Combination 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 subgroups of [C08F 4/00](#) may be used for forming Combination sets, which is the case in the groups [C08F 12/00](#), [C08F 112/00](#), [C08F 212/00](#), [C08F 36/00](#), [C08F 136/00](#), [C08F 236/00](#) or subgroups thereof, e.g. ([C08F 210/16](#), [C08F 4/64](#)).

In the groups [C08F 10/00](#), [C08F 110/00](#) and [C08F 210/00](#), all subgroups of these product groups may be used in Combination set with all subgroups of [C08F 4/00](#).

For catalysts, which are used together with a co-catalyst, classification in the groups [C08F 4/54](#) and lower takes precedence (up to [C08F 4/7098](#)).

For example, the homopolymerisation of ethylene using a chromium oxide catalyst is classified in ([C08F 110/02](#), [C08F 4/24](#)). However, if an (aluminium) co-catalyst is also present, it has to be classified in ([C08F 110/02](#), [C08F 4/69](#)).

The subgroups [C08F 4/72](#) - [C08F 4/82](#) are dedicated to catalysts without co-catalyst where the procatalyst is a metal, a metal hydride or a metallo-organic compound not provided for in [C08F 4/44](#), i.e. Groups 4-10: Ti-Ni; Zr-Pd; Hf-Pt or Si, e.g. Ti(allyl).

Procatalysts having a multidentate ligand are classified in [C08F 4/60003](#), [C08F 4/62003](#), [C08F 4/64003](#), [C08F 4/68008](#), [C08F 4/69008](#), [C08F 4/7001](#) or subgroups according to the structure of their ligand.

Last place rule:

The "Last Place Rule" applies to this subclass, e.g. when the procatalyst contains Ti, a symbol in [C08F 4/64](#) or subgroups is given, except for:

metallocene catalysts classified in [C08F 4/619-C08F 4/61927](#), [C08F 4/639-C08F 4/63927](#) or [C08F 4/659-C08F 4/65927](#). For these subclasses, one symbol is attributed to the invention and [C08F](#) Indexing Codes to all the other components of the catalyst;

catalysts comprising multidentate ligands classified in [C08F 4/60003](#) or subgroups (or their corresponding groups [C08F 4/62003](#), [C08F 4/64003](#), [C08F 4/68008](#), [C08F 4/69008](#) or [C08F 4/7001](#))).

Attention is drawn to the use of [C08F](#) Indexing Codes:

In [C08F 4/00-C08F 4/82](#), only the following Indexing Codes are used:

[C08F 4/619-C08F 4/61927](#), [C08F 4/639-C08F 4/63927](#) or [C08F 4/659-C08F 4/65927](#) are used for the metallocene catalysts in order to specify all the components of the catalyst, e.g. support, activator or kind of metallocene.

[C08F 2410/00-C08F 2410/05](#) are used to further characterise the catalyst, e.g. additive, multinuclear or dual.

[C08F 2420/00- C08F 2420/06](#) are only used for catalyst compounds containing Cp or analogue ligand to further characterise their structure.

Further explanations and indications on how the classification scheme is used in this group

When prepolymerisation is a special feature of the invention, group [C08F 4/6092](#), [C08F 4/6292](#) or [C08F 4/6492](#) is given, e.g. catalyst containing an organic hydrocarbon compound containing aliphatic unsaturation;

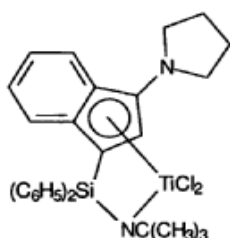
When the catalyst comprises a specific non metallic external electron donor containing oxygen, a group [C08F 4/6094](#), [C08F 4/6294](#) or [C08F 4/6494](#) is given, e.g. catalyst containing an organic compound containing oxygen;

When the catalyst comprises a specific external electron donor containing silicon, a group [C08F 4/6065](#), [C08F 4/6265](#) or [C08F 4/6465](#) is given, e.g. catalyst comprising at least two different metals, containing silicon.

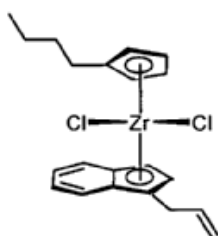
Structure of Specific Procatalysts

1. Metallocenes classified in [C08F 4/619](#), [C08F 4/639](#), [C08F 4/659](#) or subgroups.

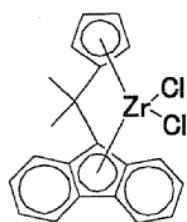
- Constrained geometry catalyst or CGC (transition metal complexes bearing linked amido ligands): e.g. classified in [C08F 4/6592](#) (Component of [C08F 4/64](#) containing a transition metal-carbon bond containing at least one Cp (cyclopentadienyl), Ind (indenyl) or Flu (fluorenyl) ring)



- Unbridged metallocenes: e.g. classified in [C08F 4/65925](#) (Component of [C08F 4/64](#) containing a transition metal-carbon bond containing 2 non-bridged Cp rings)

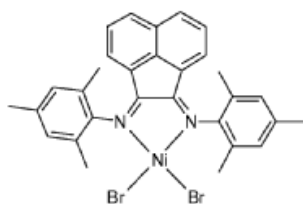


- Bridged metallocenes: e.g. classified in [C08F 4/65927](#) (Component of [C08F 4/64](#) containing a transition metal-carbon bond containing 2 bridged Cp rings)

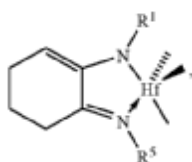


2. Procatalysts with Multidentate ligands in [C08F 4/60](#), [C08F 4/62](#), [C08F 4/64](#), [C08F 4/68](#), [C08F 4/69](#) and [C08F 4/70](#).

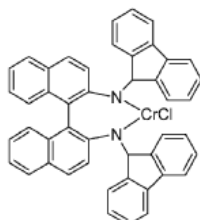
- [C08F 4/7006](#): compound of [C08F 4/70](#) having a bidentate neutral NN ligand e.g.



- [C08F 4/64044](#): compound of [C08F 4/64](#) having a bidentate monoanionic NN ligand.



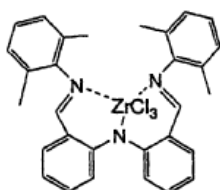
- [C08F 4/69181](#): compound of [C08F 4/69](#) having a bidentate dianionic NN ligand .



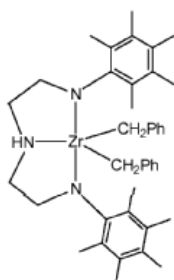
- [C08F 4/7042](#): compound of [C08F 4/70](#) having a tridentate neutral NNN ligand



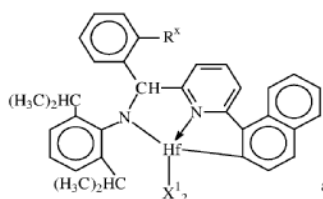
- [C08F 4/64113](#): compound of [C08F 4/64](#) having a tridentate monoanionic NNN ligand



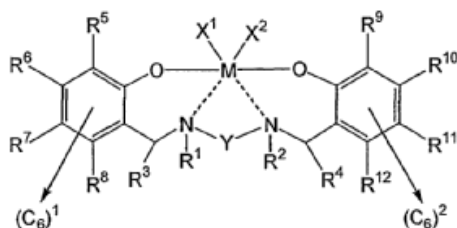
- [C08F 4/64148](#): compound of [C08F 4/64](#) having a tridentate dianionic NN(R)N ligand



- [C08F 4/64144](#): compound of [C08F 4/64](#) having a tridentate dianionic NN(R)C ligand.



- [C08F 4/64189](#): compound of [C08F 4/64](#) having a tetradentate dianionic ONNO ligand



Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Cp or Cp*	Cyclopentadienyl
Pro-catalyst	Component or compound of C08F 4/60

Synonyms and Keywords

Cocatalyst	Activator
Cp, Cp*	Cp or Cp* Cyclopentadienyl, Me5C5
Flu	Fluorenyl
Ind	Indenyl
MAO, MMAO, DIBAO or IBAO	Alumoxane, aluminoxane
Procatalyst	Catalyst component

C08F 6/00

Post-polymerisation treatments ([C08F 8/00](#) takes precedence; of conjugated diene rubbers [C08C](#))

Definition statement

This place covers:

- The physical modification by post-polymerisation treatment of macromolecular compounds which belong to any among the groups [C08F 10/00](#) - [C08F 34/04](#), [C08F 38/00](#) - [C08F 38/04](#), [C08F 110/00](#) - [C08F 134/04](#), [C08F 138/00](#) - [C08F 138/04](#), [C08F 210/00](#) - [C08F 234/04](#) and [C08F 238/00](#) - [C08F 299/08](#).
- Removal of residual monomers by physical means from solutions, suspensions, dispersions or emulsions of polymers, without recovery of the polymer therefrom.
- Removal of residual monomers by physical means from solid polymers or polymer melts.
- Neutralisation of the polymer mass covers also killing the catalyst, removing catalyst residues, removing of metals and metal residues in general, extraction processes therefore or cation exchange processes therefore.
- Treatment of polymer solutions covers solvent exchange treatment, nano-, micro- and ultra-filtration.
- Removal of volatile materials covers only removal of solvents, but not removal of monomers.
- Separation of polymers from solutions covers osmosis, precipitation, phase separation.
- Purification of polymer emulsions covers separation of surfactants or emulsifiers from polymers.
- Increasing the size of dispersed particles, e.g. agglomeration.
- Concentration of polymer emulsions, e.g. membrane filtration processes, producing of high solids.
- Coagulation of polymer emulsions, e.g. with salts, salt-free, by high shear forces, (e.g. for sewage purification, sewage treatment, waste water purification, waste water treatment).

Relationships with other classification places

- Post-polymerisation treatments of conjugated diene rubbers are only classified in [C08C 1/00](#) - [C08C 19/44](#).
- Chemical modification by after-treatment is classified in [C08F 8/00](#) - [C08F 8/50](#)
- Working-up; general processes of compounding; are classified in [C08J](#).

References

Limiting references

This place does not cover:

Polymerisation using short stopping agents	C08F 2/42
Treatment or chemical modification of rubbers, i.e. natural rubber or conjugated diene rubbers	C08C 1/00 - C08C 19/44
Post-polymerisation treatments of addition polymers of aldehydes or cyclic oligomers thereof or of ketones	C08G 2/28
Post-polymerisation treatments of polymeric products of isocyanates or isothiocyanates	C08G 18/82
Post-polymerisation treatments of macromolecular compounds obtained by reactions forming a carboxylic ester link, e.g. polyesters	C08G 63/88 - C08G 63/90
Post-polymerisation treatments of macromolecular compounds obtained by reactions forming a carbonic ester link in the main chain of the macromolecule, e.g. polycarbonates	C08G 64/40 - C08G 64/406

Post-polymerisation treatments of macromolecular compounds obtained by reactions forming an ether link in the main chain of the macromolecule (e.g. polyethers)	C08G 65/30 , C08G 65/46
Post-polymerisation treatments of macromolecular compounds obtained by reactions forming a carboxylic amide link in the main chain of the macromolecule (e.g. polyamides)	C08G 69/46
Post-polymerisation treatments of macromolecular compounds obtained by reactions forming a linkage containing silicon with or without sulphur, nitrogen, oxygen or carbon in the main chain of the macromolecule	C08G 77/32 - C08G 77/36
Post-polymerisation treatments in general processes for preparing compounds provided for in C08G	C08G 85/002
Working up; General processes of compounding; After-treatment not covered by subclasses C08B , C08C , C08F , C08G	C08J 3/00 - C08J 9/42
Crosslinking, e.g. vulcanising, of macromolecules	C08J 3/24
Treatment by wave energy or particle radiation	C08J 3/28
Recovery or working up of waste materials	C08J 11/00 , C08J 11/28

Informative references

Attention is drawn to the following places, which may be of interest for search:

Macromolecular homopolymers and copolymers obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08F 10/00 - C08F 38/04
Macromolecular homopolymers obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08F 110/00 - C08F 138/04
Macromolecular copolymers obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08F 210/00 - C08F 301/00
Processes for making harmful chemical substances harmless or less harmful	A62D 3/00
Separation	B01D 1/00 - B01D 71/82
Reactors for chemical or physical processes	B01J 19/00
Shaping or joining of plastics; shaping of substances in a plastic state, in general; after-treatment of the shaped products, e.g. repairing	B29C 31/00 - B29C 73/34
Compositions (other than coating, adhesive) of macromolecular compounds obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08L 23/00 - C08L 57/12
Coating compositions, e.g. paints, varnishes, lacquers; filling-pastes; chemical paint or ink removers; inks; correcting fluids; woodstains; pastes or solids for colouring or printing; use of materials therefore	C09D 1/00 - C09D 201/10
Adhesives; non-mechanical aspects of adhesive processes in general; adhesive processes not provided for elsewhere; use of materials as adhesives	C09J 1/00 - C09J 201/10
Adaptive control systems	G05B 13/00

Special rules of classification

- In groups [C08F 6/00](#) - [C08F 6/28](#) the treatment of specific polymers is indicated using the subdivision of [C08L 23/00](#) - [C08L 57/12](#) in the form of Combination sets.

- Example: purification of polytetrafluoroethylene, e.g. separation of fluorinated emulsifiers after polymerisation in the production process of polytetrafluoroethylene is classified in ([C08F 6/12](#), [C08L 25/06](#)).
- Group [C08F 6/001](#), [C08F 6/003](#) and [C08F 6/005](#) take precedence over [C08F 6/10](#).
- Groups [C08F 6/001](#), [C08F 6/006](#), [C08F 6/008](#), [C08F 6/02](#) and [C08F 6/04](#) take precedence over the other groups.
- Groups [C08F 8/00](#) - [C08F 8/50](#) take precedence over [C08F 6/00](#) - [C08F 6/28](#).

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Post-polymerisation treatment	Treatment steps taking place after a polymerisation process, being mainly physical steps, such as purification, isolation
Chemical modification by after-treatment	Chemical modification of a polymer, e.g. functionalisation, polymer-analogous reactions
Working-up; general processes of compounding; covered by C08J	Processes of treating or compounding macromolecular substances such as mixing polymers, powdering or granulating, plasticising, compounding with additives, using masterbatching techniques, crosslinking; manufacture of articles or shaped materials containing macromolecular substances; chemical treatment or coating of shaped articles made of macromolecular substances; working up of macromolecular substances to porous or cellular articles or materials and after-treatment thereof

Synonyms and Keywords

Residual monomer	rest monomer, unreacted monomer
Post-polymerisation treatment	after-polymerisation treatment
Removal of residual monomers by chemical reaction	post-polymerisation, after-polymerisation, scavenging, chasing
Solid wetted polymer	polymer gel, coagulum, filter cakes, swollen resins, wetted by either water or organic solvents
Fractionation	separation of monomer - oligomer - polymer, separation of low and high molecular weight fractions

C08F 8/00

Chemical modification by after-treatment (graft polymers, block polymers, crosslinking with unsaturated monomers or with polymers [C08F 251/00](#) - [C08F 299/00](#); of conjugated diene rubbers [C08C](#); crosslinking in general [C08J](#))

Definition statement

This place covers:

The chemical modification by after-treatment (or post-treatment) of macromolecular compounds which belong to any among the groups [C08F 10/00](#) - [C08F 34/04](#), [C08F 38/00](#) - [C08F 38/04](#), [C08F 110/00](#) - [C08F 134/04](#), [C08F 138/00](#) - [C08F 138/04](#), [C08F 210/00](#) - [C08F 234/04](#) and [C08F 238/00](#) - [C08F 299/08](#).

References

Limiting references

This place does not cover:

Graft polymers, block polymers or cross-linking reactions with unsaturated monomers or polymers	C08F 251/00 - C08F 299/08
Chemical modification of natural rubber or conjugated diene rubbers, i.e. the polymers covered by the subdivisions C08F 36/00 - C08F 36/22 , C08F 136/00 - C08F 136/22 and C08F 236/00 - C08F 236/22	C08C 19/00 - C08C 19/44
Cross-linking, e.g. vulcanising, of macromolecules when specific crosslinking aspects not classifiable in C08G , C08F or C08K are involved	C08J 3/24 - C08J 3/26
Treatment by wave energy or particle radiation	C08J 3/28
Chemical treatment or coating of shaped articles made of macromolecular substances	C08J 7/00 - C08J 7/18
Recovery or working-up of waste material made of polymers by chemically breaking down the molecular chains of polymers or breaking of crosslinks, e.g. devulcanisation	C08J 11/10 - C08J 11/28
Use of inorganic or non-macromolecular organic substances as compounding ingredients	C08K
Chemical modification of drying oils	C09F 7/00 - C09F 7/10
Other features in dyeing solid macromolecular substances in any form	D06P 5/00 - D06P 5/30

Informative references

Attention is drawn to the following places, which may be of interest for search:

Use of compositions of macromolecular compounds or of compositions of derivatives of said macromolecular compounds in pesticides or herbicides	A01N 25/10
Use of compositions of macromolecular compounds or of compositions of derivatives of said macromolecular compounds in pharmaceuticals or cosmetics	A61K 8/81 , A61K 8/90 , A61K 8/91
Use of compositions of macromolecular compounds or of compositions of derivatives of said macromolecular compounds in explosives	C06B
Compositions of macromolecular compounds obtained by reactions involving only carbon-to-carbon unsaturated bonds or compositions of derivatives of said macromolecular compounds	C08L 23/00 - C08L 57/12
Compositions of unspecified macromolecular compounds or compositions of derivatives of said unspecified macromolecular compounds	C08L 101/00 - C08L 101/16
Polymeric dyes; reaction products of dyes with monomers or with macromolecular compounds	C09B 69/10
Coating compositions based on organic macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds and coating compositions based on derivatives of said macromolecular compounds	C09D 123/00 - C09D 157/12
Coating compositions based on unspecified macromolecular compounds and coating compositions based on derivatives of said unspecified macromolecular compounds	C09D 201/00 - C09D 201/10

Adhesives based on organic macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds and adhesives based on derivatives of said macromolecular compounds	C09J 123/00 - C09J 157/12
Adhesives based on unspecified macromolecular compounds and adhesives based on derivatives of said unspecified macromolecular compounds	C09J 201/00 - C09J 201/10
Use of compositions of macromolecular compounds or of derivatives of said macromolecular compounds in materials for miscellaneous applications not provided for elsewhere	C09K
Use of compositions of macromolecular compounds or of compositions of derivatives of said macromolecular compounds in lubricants	C10M
Use of compositions of macromolecular compounds or of compositions of derivatives of said macromolecular compounds in detergents	C11D
Use of compositions of macromolecular compounds or of compositions of derivatives of said macromolecular compounds in artificial filaments or fibres	D01F
Use of compositions of macromolecular compounds or of compositions of derivatives of said macromolecular compounds in textile treating compositions	D06

Special rules of classification

1. In the absence of an indication to the contrary a chemical modification is classified in the last appropriate place; likewise, in the absence of an indication to the contrary, the symbol of the specific polymer concerned by the modification is given in accordance with the last place rule.

2.1 The chemical modifications of polymers of the relevant [C08F](#) type (as defined above in the definition statement) which are exemplified in a document and which belong to a single kind of modification, as defined from [C08F 8/00](#) - [C08F 8/50](#), should be given a classification in the form of a Combination set which indicates the kind of chemical modification and the nature of the polymer involved.

Example: ([C08F 8/12](#), [C08F 118/08](#)) for the hydrolysis of poly(vinylacetate).

2.2 When there is no exemplified modification of any specific polymer and the polymers potentially concerned by the modification(s) cannot be described by one single [C08F](#) polymer symbol, then only one or more single [C08F 8/00](#) symbols describing the modification(s) taught in the document should be allocated, i.e. there is no Combination set allocated in this case.

Example: [C08F 8/32](#) is given when the reaction with an amine compound is taught in a document for various types of [C08F](#) polymers, e.g., polyacrylates, graft or block copolymers or polyolefines without any disclosure of a particular polymer being modified in an example of said document.

2.3 When there is no exemplified modification of any specific polymer, but the polymers concerned by the modification(s) all belong to a family of polymers which can be characterised by a single [C08F](#) main group, then one or more Combination set symbols may be allocated thereto.

Example: ([C08F 8/50](#), [C08F 10/00](#)) is given to indicate that the document concerned solely teaches the partial depolymerisation of polyolefins, although it does not disclose any depolymerisation example of a specific polyolefin.

3. When a document discloses two examples based on [C08F](#) polymers containing the same repeating units, but where in the first example a homopolymer is chemically modified, whereas in the second example a copolymer with the above repeating unit present in majority is chemically modified, then only one Combination set classification should be given.

Example: (C08F 8/12, C08F 18/08) is given to indicate that the polymer which is hydrolysed is either a homopolymer of vinyl acetate or a copolymer mainly containing vinyl acetate.

4. Multi-step chemical modifications:

4.1 The complete sequence of chemical modifications applied to each exemplified specific starting polymer should be indicated in the form of Combination sets which start at the right end with the symbol for the starting unmodified polymer and continue towards the left end with the C08F 8/00 symbols corresponding to the chronological sequence of modification steps applied thereto.

Examples:

- (C08F 8/32, C08F 8/46, C08F 110/10) for a polyisobutylene with vinylidene end groups which has been modified in a first step with maleic anhydride through an "Alder-ene" reaction and then aminated in a second step to form a succinimide functionalised polyisobutylene;
- (C08F 8/28, C08F 8/12, C08F 118/08) for the (partial or complete) hydrolysis of a polyvinyl acetate homopolymer in a first step, followed by the subsequent chemical modification with an aldehyde in a second step.

4.2 For documents without any exemplified embodiment, the classification should preferably be given as follows:

i) when it is taught in a document that several types of polymers (e.g. polyolefines, halogenated polymers, polyacrylates, graft copolymers and block copolymers) may be modified via a sequence of successive chemical modification steps, then only unlinked C08F 8/00 symbol should be allocated in view of the different essential modification steps which are taught in the document, since all the polymers potentially concerned by the sequence of modification steps cannot be adequately described by one single C08F main group (see also above under 2.2).

Example:

C08F 8/14 and C08F 8/50 are given when an esterification step followed by a partial depolymerisation step are taught in a document in view of various types of C08F polymers (e.g., polyacrylates, polyvinylalcohols, graft or block copolymers) without any disclosure of a particular polymer being modified in an example of said document.

ii) when the sequence of chemical modification steps applies solely to a group of polymers which can be adequately characterised by one single C08F main group, then a Combination set classification may be allocated thereto (see also above under 2.3).

Example: (C08F 8/50, C08F 8/42, C08F 8/34, C08F 10/00) is given to indicate that the document concerned teaches a sequence of modification steps applicable to polyolefins which starts with the introduction of a sulfur-containing group and ends with a partial depolymerisation step, but does not disclose an example wherein said modifications steps are applied to any specific polyolefin.

5. Many alternative modifications suggested and/or exemplified within a single document:

A precise classification should be given in the form of a Combination set for each alternative chemical modification exemplified in the document.

Example:

(C08F 8/04, C08F 110/10) when a polymer to be hydrogenated is an isobutylene homopolymer, and

(C08F 8/06, C08F 210/10) when a polymer to be oxidized, in the same document, is a copolymer based on isobutylene as a comonomer present in majority.

6. When the structure of the main repeating unit in the polymer to be modified is unknown (e.g. a polymer solely identified via a trade name in the examples), classification in the form of a Combination set is normally not given (i.e., only one or more unlinked C08F 8/00 symbol(s) is/are given), unless it appears to be clear from the teaching of the document that the chemical modification(s) involved

concern(s) only polymers which can be adequately characterised by a single [C08F](#) symbol (e.g. [C08F 12/06](#) for polyvinylalcohol) or by a single [C08F](#) main group symbol (e.g. [C08F 12/00](#) for vinylaromatic polymers).

7. When a chemical modification of a [C08F](#) type polymer (as defined above under the definition statement) does not correspond to any among the specific chemical modifications defined in the subdivisions [C08F 8/02](#) - [C08F 8/50](#), then the main group [C08F 8/00](#) should be given for the purpose of the Combination set classification or for the purpose of an unlinked [C08F 8/00](#) classification.

8. For comonomer repeating unit(s) present in minority in a copolymer which has been chemically modified, appropriate [C08F](#) Indexing Codes should be given in order to specify the nature of said comonomer repeating unit(s) present in minority.

9. The Indexing Code [C08F 2800/10](#) should be given in order to indicate that the proportions of the comonomers in a copolymer to be modified are expressed as molar percentage.

10. The Indexing Code [C08F 2800/20](#) should be given in order to indicate that the proportions of the comonomers in a copolymer to be modified are expressed as weight or mass percentages.

11. The Indexing Code [C08F 2810/10](#) should be given in order to indicate that the chemical modification of a polymer includes a reactive processing step (i.e. high shear forces are applied to a polymer, e.g. in an extruder or a similar processing apparatus) which leads, inter alia, to morphological and/or rheological modifications thereof (e.g. a visbreaking).

12. The Indexing Code [C08F 2810/20](#) should be given in order to indicate that the chemical modification of a polymer leads to a crosslinking thereof, either explicitly or inherently.

13. The Indexing Code [C08F 2810/30](#) should be given in order to indicate that the chemical modification of a polymer leads to the formation or introduction of aliphatic or alicyclic unsaturated groups therein.

14. The Indexing Code [C08F 2810/40](#) should be given in order to indicate that the chemical modification of a polymer takes place solely at one end or both ends of the polymeric backbone, i.e. not in the side or lateral chains thereof.

15. The Indexing Code [C08F 2810/50](#) should be given in order to indicate that the chemical modification of a copolymer takes place only on one or more of the monomers present in minority.

C08F 8/02

Alkylation

Definition statement

This place covers:

The transfer of an alkyl group from a molecule to macromolecular compounds which belong to any one among the groups [C08F 10/00](#) - [C08F 34/04](#), [C08F 38/00](#) - [C08F 38/04](#), [C08F 110/00](#) - [C08F 138/04](#), [C08F 210/00](#) - [C08F 234/04](#) and [C08F 238/00](#) - [C08F 299/08](#).

Special rules of classification

- The alkyl group which is transferred may contain one or more non-alkyl hydrocarbon substituents such as an aromatic ring
- In the presence of heteroatoms in the transferred alkyl group, a symbol in accordance with the last place rule is allocated.

Examples of substitutions with one single heteroatom:

- a haloalkylation is classified in [C08F 8/24](#);
- a nitrogen substituted alkyl group is classified in [C08F 8/30](#)

- a sulphur substituted alkyl group is classified in [C08F 8/34](#)
- a phosphor substituted alkyl group is classified in [C08F 8/40](#)
- a metal substituted alkyl group is classified in [C08F 8/42](#) (boron and silicon are considered as metals)
- an oxygen substituted alkyl group such as an alkyl chain with a hydroxyl substituent is classified in [C08F 8/02](#).

C08F 8/30

Introducing nitrogen atoms or nitrogen-containing groups (polymeric products of isocyanates or thiocyanates [C08G](#))

Definition statement

This place covers:

The introduction of nitrogen atoms or nitrogen-containing groups into macromolecular compounds which belong to any one among the groups [C08F 10/00 - C08F 34/04](#), [C08F 38/00 - C08F 38/04](#), [C08F 110/00 - C08F 134/04](#), [C08F 138/00 - C08F 138/04](#), [C08F 210/00 - C08F 234/04](#) and [C08F 238/00 - C08F 299/08](#).

References

Limiting references

This place does not cover:

Polymeric products of isocyanates or thiocyanates	C08G 18/00
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C08F 8/32

by reaction with amines

Definition statement

This place covers:

The introduction of nitrogen atoms or nitrogen-containing groups, by reaction with amines, into macromolecular compounds which belong to any one among the groups [C08F 10/00 - C08F 34/04](#), [C08F 38/00 - C08F 38/04](#), [C08F 110/00 - C08F 134/04](#), [C08F 138/00 - C08F 138/04](#), [C08F 210/00 - C08F 234/04](#) and [C08F 238/00 - C08F 299/08](#).

References

Limiting references

This place does not cover:

Polymeric products of isocyanates or thiocyanates	C08G 18/00
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C08F 8/42

Introducing metal atoms or metal-containing groups

Definition statement

This place covers:

The introduction of metal atoms or metal-containing groups into macromolecular compounds which belong to any one among the groups [C08F 10/00 - C08F 34/04](#), [C08F 38/00 - C08F 38/04](#),

[C08F 110/00](#) - [C08F 134/04](#), [C08F 138/00](#) - [C08F 138/04](#), [C08F 210/00](#) - [C08F 234/04](#) and [C08F 238/00](#) - [C08F 299/08](#).

Special rules of classification

- In this subgroup, boron and silicon are considered as metals.

C08F 8/46

Reaction with unsaturated dicarboxylic acids or anhydrides thereof, e.g. maleinisation

Definition statement

This place covers:

The reaction of macromolecular compounds which belong to any one among the groups [C08F 10/00](#) - [C08F 34/04](#), [C08F 38/00](#) - [C08F 38/04](#), [C08F 110/00](#) - [C08F 134/04](#), [C08F 138/00](#) - [C08F 138/04](#), [C08F 210/00](#) - [C08F 234/04](#) and [C08F 238/00](#) - [C08F 299/08](#) with unsaturated dicarboxylic acids or anhydrides thereof when the chemical reaction involved comprises a condensation reaction with at least one of the carboxylic acid functions, a ring opening of an anhydride function or an "ene" reaction.

References

Limiting references

This place does not cover:

Macromolecular compounds obtained by polymerising unsaturated dicarboxylic acids or anhydrides thereof on to macromolecular compounds according to any among the groups C08F 251/00 - C08F 291/18	C08F 251/00 - C08F 291/18
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C08F 8/48

Isomerisation; Cyclisation

Definition statement

This place covers:

Isomerisations and/or cyclisations performed on macromolecular compounds which belong to any one among the groups [C08F 10/00](#) - [C08F 34/04](#), [C08F 38/00](#) - [C08F 38/04](#), [C08F 110/00](#) - [C08F 134/04](#), [C08F 138/00](#) - [C08F 138/04](#), [C08F 210/00](#) - [C08F 234/04](#) and [C08F 238/00](#) - [C08F 299/08](#).

Special rules of classification

- When the cyclisation is an epoxidation, [C08F 8/08](#) takes precedence.
- When the cyclisation is a lactonisation, [C08F 8/16](#) takes precedence.

C08F 10/00

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

Definition statement

This place covers:

Documents relating to polyolefins according to the following two cases:

- if the document discloses examples of homopolymers and copolymers defined by properties of its own, which are expressed by parameters (e.g. molecular weight or density), or
- if the document is related to general aspects of the process and / or catalyst, in particular in combination with a process and /or a catalyst group in the form of a Combination set.

Relationships with other classification places

Films containing a polymer classified in [C08F 10/00](#) or subgroups, are classified in [C08J 5/18](#) with Combination sets when applicable, if the polymer is not claimed as such.

Fibres containing a polymer classified in [C08F 10/00](#) or subgroups, are classified in [D01F](#), if the polymer is not claimed as such.

References

Limiting references

This place does not cover:

Polymer compositions containing polymers classified in the groups C08F 10/00 or subgroups	C08L 23/00
Coating compositions containing polymers classified in the groups C08F 10/00 or subgroups	C09D 123/00
Adhesive compositions containing polymers classified in the groups C08F 10/00 or sub groups	C09J 123/00

Special rules of classification

- [C08F 10/00](#)+ does not relate to blends.
- If a document discloses only homopolymers, it is classified in [C08F 110/00](#).
- If a document discloses only copolymers, it is classified in [C08F 210/00](#).
- if a document is more related to general aspects of the process and / or catalyst and discloses examples of homopolymers and copolymers, it is classified in the more general group [C08F 10/00](#), in particular in combination with a process and catalyst class as a Combination set.

In the groups [C08F 10/00-C08F 10/14](#), the polymers obtained in the following examples described in the experimental section of the document to be classified are classified with the corresponding Indexing Codes in [C08F](#), in the form of Combination sets. The Combination set base symbol is the monomer in majority, followed by the Indexing Code(s) describing the other monomer(s) in the decreasing order of their amounts, followed by the symbol describing the corresponding properties in [C08F 2500/00-C08F 2500/26](#).

Examples:

- a homopolymer of ethylene having a high molecular weight and a narrow molecular weight distribution is classified in ([C08F 110/02](#), [C08F 2500/01](#), [C08F 2500/03](#))
- a copolymer of ethylene and pentene having a high molecular weight, a narrow molecular weight distribution and a specified melt flow index is classified in ([C08F 210/16](#), [C08F 210/14](#), [C08F 2500/01](#), [C08F 2500/12](#)).

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 Combination sets, e.g. ([C08F 10/02](#), [C08F 4/651](#))

If the process for the preparation of polymers classified in [C08F 10/00](#) or subgroups, is an important subject-matter, the document is classified in the form of a Combination set, e.g. ([C08F 10/02](#), [C08F 2/001](#)).

If the catalyst for the preparation of polymers, classified in [C08F 10/00-C08F 10/14](#), is an important subject-matter, the document is classified in the form of a Combination set, e.g. ([C08F 10/02](#), [C08F 4/69](#)).

Attention is also drawn to the definitions of [C08F 2/00](#) and [C08F 4/00](#).

If classification is made for a use, e.g. fibre or film, the polymer as such should be indexed with the corresponding Indexing Codes in [C08F](#).

C08F 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

Definition statement

This place covers:

Homopolymers and copolymers being derived from one or more unsaturated aliphatic radicals as the major part, each radical having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring;

- Homopolymers and copolymers based on allyl benzene and/or beta-alkyl-vinyl aromatic monomers, e.g. 1-propenylbenzene are classified in [C08F 12/06](#);
- Poly(alpha-alkyl vinyl aromatic) homopolymers and copolymers e.g. poly(alpha-methyl-styrenes) are classified in [C08F 12/12](#), Poly(alpha-alkyl vinyl aromatic) homopolymers and copolymers with a ring substituted by an alkyl radical are classified in [C08F 12/12](#),
- Vinyl aromatic homopolymers and copolymers with a ring substituted by an alkyl radical are classified in [C08F 12/12](#); Homopolymers and copolymers based on monomers substituted by silicon atoms or groups containing silicon atoms are classified in [C08F 12/14](#);
- Homopolymers and copolymers based on vinyl naphthalene, acenaphthalene or vinyl anthracene are classified in [C08F 12/32](#).

Relationships with other classification places

- Subject-matter limited to homopolymers is classified in [C08F 112/00](#) - [C08F 112/36](#).
- Subject matter limited to copolymers is classified in [C08F 212/00](#) - [C08F 212/36](#);
- Compositions of the polymers of [C08F 12/00](#) are classified in [C08L 25/00](#) - [C08L 25/18](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 12/00](#) are classified in [C08F 257/00](#) - [C08F 257/02](#) (graft copolymers).
- Copolymers having as the minor part 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 are classified in the Indexing codes [C08F 212/00](#) - [C08F 212/36](#).

References

Limiting references

This place does not cover:

Chemical modification by after-treatment of polymers of C08F 12/00	(C08F 8/00 , C08F 12/00) – (C08F 8/50 , C08F 12/36)
Copolymers having as the minor part 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	C08F 212/00 - C08F 212/36

Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group C08F 12/00	C08F 257/00 - C08F 257/02
Graft copolymers that are obtained by grafting vinyl aromatic monomers on to polymers of conjugated dienes	C08F 279/04 - C08F 279/06
Macromolecular compounds obtained by polymerising monomers on to polymers modified by introduction of aliphatic unsaturated end or side groups	C08F 290/044 , C08F 290/124
Block copolymers	C08F 293/00 - C08F 297/086
Making expandable particles comprising polymers of C08F 12/00	(C08J 9/16 , C08L 25/00) - (C08J 9/20 , C08L 25/18)
Compositions of homopolymers or 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; Compositions of derivatives of such polymers	C08L 25/00 - C08L 25/18
Coating compositions based on homopolymers or 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; Coating compositions based on derivatives of such polymers	C09D 125/00 - C09D 125/18
Adhesives based on homopolymers or 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; Adhesives based on derivatives of such polymers	C09J 125/00 - C09J 125/18

Informative references

Attention is drawn to the following places, which may be of interest for search:

Post-polymerisation treatments of polymers of C08F 12/00	(C08F 6/00 , C08L 25/00) - (C08F 6/28 , C08L 25/18)
Copolymers of maleic anhydride with minor part of vinyl aromatic monomers	C08F 222/08
Copolymers of conjugated dienes with minor part of vinyl aromatic monomers	C08F 236/10
Layered products essentially comprising synthetic resin	B32B 27/08 , B32B 27/30
Treatment or chemical modification of rubbers (e.g. SBR rubber)	C08C
Working-up of macromolecular substances to porous or cellular articles or materials comprising polymers of C08F 12/00 ; After-treatment thereof	C08J 9/0061
Compositions of copolymers of conjugated diene hydrocarbons with styrene, e.g. SBR rubber	C08L 9/06 - C08L 9/08
Compositions of copolymers of ethylene with aromatic monomers	C08L 23/0838
Compositions of copolymers of allyl alcohol with vinyl-aromatic monomers	C08L 29/08
Grafted styrene block copolymer based compositions, e.g. grafted SBS, grafted SEBS or grafted SEPS	C08L 51/006
Compositions of graft copolymers with graft base being a rubber, e.g. high impact polystyrene type based compositions (HIPS)	C08L 51/04

Styrene block copolymer based compositions, e.g. SBS, SEBS or SEPS	C08L 53/00 - C08L 53/025
ABS (acrylonitrile butadiene styrene) based compositions	C08L 55/02
Artificial filaments or fibres comprising aromatic vinyl resins	D01F 6/22 , D01F 6/42 , D01F 6/56
Insulators consisting of aromatic vinyl resins	H01B 3/442

Special rules of classification

- In [C08F 12/00-C08F 12/36](#) the method of polymerisation may be indicated using the subdivisions of [C08F 2/00-C08F 2/60](#) in the form of a Combination set, e.g. ([C08F 12/08](#), [C08F 2/20](#)).
- In [C08F 12/00-C08F 12/36](#) the nature of the polymerisation catalyst may be indicated using the subdivisions of [C08F 4/00-C08F 4/82](#) in the form of a Combination set, e.g. ([C08F 12/04](#), [C08F 4/62](#)).
- If the subject-matter covers homopolymers and copolymers a [C08F 12/00](#) symbol should be given, homopolymers only are classified in [C08F 112/00](#), copolymers only are classified in [C08F 212/00](#).
- One (or more) Indexing code(s) in [C08F 212/00](#) has (have) to be given if, in a copolymer, the monomer(s) in minority belong(s) to the present subgroup.
- One (or more) Indexing code(s) in [C08F 210/00](#) - [C08F 238/04](#) has (have) to be given for the monomer(s) in minority of a copolymer whose monomer in majority belongs to the present subgroup.

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

ABS	Acrylonitrile butadiene styrene
AMS	alpha-Methyl-styrene or isopropenyl styrene
At-PS, a-PS, aPS	Atactic polystyrene
DVB	Divinyl benzene
HIPS	High impact polystyrene
It-PS, i-PS, iPS	Isotactic polystyrene
PS	Polystyrene
SAN	Styrene acrylonitrile copolymer
SBR	Styrene butadiene rubber
St-PS, s-PS, sPS	Syndiotactic polystyrene
SBS	Styrene butadiene styrene block copolymer
SIS	Styrene isoprene styrene block copolymer

C08F 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

Definition statement

This place covers:

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, e.g. vinyl chloride, vinylidene chloride, 1,2- dichloroethene, vinyl fluoride, vinylidene fluoride, trifluorochloroethene, tetrafluoroethene or hexafluoropropene.

Special rules of classification

In groups [C08F 14/06](#) and [C08F 14/18](#) 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](#), e.g. ([C08F 14/18](#), [C08F 2/38](#)).

C08F 16/00

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 alcohol, ether, aldehydo, ketonic, acetal or ketal radical

Definition statement

This place covers:

Besides said homopolymers and copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 16/00](#), whereas homopolymers only are classified in [C08F 116/00](#) and copolymers only are classified in [C08F 216/00](#).
- Compositions of the polymers of [C08F 16/00](#) are classified in [C08L 29/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 12/00](#) are classified in [C08F 261/00](#)(graft copolymers).

References

Limiting references

This place does not cover:

Homopolymers and copolymers of compounds having as minor part 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.	C08F 216/00 - C08F 216/38
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Special rules of classification

Attention is drawn to the Rules of the subclass, in particular the third paragraph. To indicate that a minor part of copolymers has 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, a [C08F 216/00](#) Indexing code is given.

C08F 18/00

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 acyloxy radical of a saturated carboxylic acid, of carbonic acid or of a haloformic acid

Definition statement

This place covers:

Besides said homopolymers and copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 18/00](#), whereas homopolymers only are classified in [C08F 118/00](#) and copolymers only are classified in [C08F 218/00](#).
- Compositions of the polymers of [C08F 18/00](#) are classified in [C08L 31/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 18/00](#) are classified in [C08F 263/00](#)(graft copolymers).

References

Limiting references

This place does not cover:

Homopolymers and copolymers having a minor part of 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	C08F 218/00 - C08F 218/18
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Special rules of classification

Attention is drawn to the Rules of the subclass, in particular the third paragraph. To indicate that a minor part of copolymers has 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, a [C08F 218/00](#) Indexing code can be given.

C08F 20/00

Homopolymers and copolymers 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

Definition statement

This place covers:

Besides said homopolymers and copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 20/00](#), whereas homopolymers only are classified in [C08F 120/00](#) and copolymers only are classified in [C08F 220/00](#).
- Compositions of the polymers of [C08F 20/00](#) are classified in [C08L 33/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 20/00](#) are classified in [C08F 263/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Homopolymers and copolymers 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	C08F 220/00 - C08F 220/70
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Special rules of classification

In groups [C08F 20/12](#) - [C08F 20/14](#) 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 Combination sets, e.g. ([C08F 20/12](#), [C08F 2/26](#)).

In group [C08F 20/44](#) 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 Combination sets, e.g. ([C08F 20/44](#), [C08F 2/46](#)).

C08F 22/00

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 carboxyl radical and containing at least one other carboxyl radical in the molecule; Salts, anhydrides, esters, amides, imides or nitriles thereof

Definition statement

This place covers:

Besides said homopolymers and copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 22/00](#), whereas homopolymers only are classified in [C08F 122/00](#) and copolymers only are classified in [C08F 222/00](#).

Compositions of the polymers of [C08F 22/00](#) are classified in [C08L 35/00](#).

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 20/00](#) are classified in [C08F 267/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Homopolymers and copolymers of compounds having one or more unsaturated aliphatic radicals each having only one carbon-to-carbon double bond, at least one being terminated by a carboxyl radical and containing at least one other other carboxyl radical in the molecule; Salts, anhydrides, esters, amides, imides or nitriles thereof	C08F 222/00 - C08F 222/40
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Special rules of classification

Further subdivisions:

- Di- or polyacrylates are classified in [C08F 22/105](#).
- Di or polyacrylamide are classified in [C08F 22/385](#).
- Cyanoacrylate are classified in [C08F 22/32](#).

C08F 24/00

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 heterocyclic ring containing oxygen (cyclic esters of polyfunctional acids [C08F 18/00](#); cyclic anhydrides of unsaturated acids [C08F 20/00](#), [C08F 22/00](#))

Definition statement

This place covers:

E.g. methylene lactones.

Besides said homopolymers and copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 24/00](#), whereas homopolymers only are classified in [C08F 124/00](#) and copolymers only are classified in [C08F 224/00](#).
- Compositions of the polymers of [C08F 24/00](#) are classified in [C08L 37/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 20/00](#) are classified in [C08F 269/00](#)(graft copolymers).

References

Limiting references

This place does not cover:

Cyclic esters of polyfunctional acids	C08F 18/00
Cyclic anhydrides of unsaturated acids	C08F 20/00
Copolymers of compounds having a minor part of 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	C08F 224/00

C08F 26/00

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 single or double bond to nitrogen or by a heterocyclic ring containing nitrogen

Definition statement

This place covers:

Besides said homopolymers and copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 26/00](#), whereas homopolymers only are classified in [C08F 126/00](#) and copolymers only are classified in [C08F 226/00](#).

- Compositions of the polymers of [C08F 26/00](#) are classified in [C08L 39/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 18/00](#) are classified in [C08F 271/00](#)(graft copolymers).

References

Limiting references

This place does not cover:

Homopolymers and copolymers of compounds having a minor part of 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	C08F 226/00 - C08F 226/06
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Special rules of classification

Attention is drawn to the Rules of the subclass, in particular the third paragraph. To indicate that a minor part of copolymers has 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, a [C08F 226/00](#) Indexing code can be given.

C08F 28/00

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 bond to sulfur or by a heterocyclic ring containing sulfur

Definition statement

This place covers:

Besides said homopolymers and copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 28/00](#), whereas homopolymers only are classified in [C08F 128/00](#) and copolymers only are classified in [C08F 228/00](#).
- Compositions of the polymers of [C08F 28/00](#) are classified in [C08L 41/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 18/00](#) are classified in [C08F 273/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Homopolymers and copolymers of compounds having a minor part of 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 sulfur or by a heterocyclic ring containing sulfur	C08F 228/00
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Special rules of classification

Attention is drawn to the Rules of the subclass, in particular the third paragraph. To indicate that a minor part of copolymers has 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 sulfur or by a heterocyclic ring containing sulfur, a [C08F 228/00](#) Indexing code can be given.

C08F 30/00

Homopolymers and copolymers 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)

Definition statement

This place covers:

Besides said homopolymers and copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 30/00](#), whereas homopolymers only are classified in [C08F 130/00](#) and copolymers only are classified in [C08F 230/00](#).
- Compositions of the polymers of [C08F 30/00](#) are classified in [C08L 43/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 18/00](#) are classified in [C08F 275/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Homopolymers and copolymers of compounds having in minor parts one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing phosphorus, selenium, tellurium or a metal	C08F 230/00 - C08F 230/10
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Special rules of classification

Attention is drawn to the Rules of the subclass, in particular the third paragraph. To indicate that a minor part of copolymers has one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing phosphorus, selenium, tellurium or a metal, a [C08F 230/00](#) Indexing code can be given.

C08F 32/00

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

Definition statement

This place covers:

Besides said homopolymers and copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 32/00](#), whereas homopolymers only are classified in [C08F 132/00](#) and copolymers only are classified in [C08F 232/00](#).
- Compositions of the polymers of [C08F 32/00](#) are classified in [C08L 45/00](#).

- Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 32/00](#) are classified in [C08F 277/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Homopolymers and copolymers of compounds having in minor parts of one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond in a carboxylic ring system	C08F 232/00 - C08F 232/08
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Special rules of classification

Attention is drawn to the Rules of the subclass, in particular the third paragraph. To indicate that a minor part of copolymers has one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond in a carboxylic ring system, a [C08F 232/00](#) Indexing code can be given.

Homopolymers and copolymers of norbornene are classified in [C08F 32/08](#).

C08F 34/00

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](#))

Definition statement

This place covers:

Besides said homopolymers and copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 34/00](#), whereas homopolymers only are classified in [C08F 134/00](#) and copolymers only are classified in [C08F 234/00](#).
- Compositions of the polymers of [C08F 34/00](#) are classified in [C08L 49/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 34/00](#) are classified in [C08F 277/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Cyclic esters of polyfunctional acids	C08F 18/00
Cyclic anhydrides or imides	C08F 22/00
Homopolymers and copolymers of minor parts 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	C08F 234/00 - C08F 234/04

Special rules of classification

Attention is drawn to the Rules of the subclass, in particular the third paragraph. To indicate that a minor part of copolymers has 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, a [C08F 234/00](#) Indexing code can be given.

C08F 36/00

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)

Relationships with other classification places

- Homopolymers only are classified in [C08F 136/00](#) - [C08F 136/22](#).
- Copolymers only are classified in [C08F 236/00](#) - [C08F 236/22](#).
- Compositions of homo- or copolymers of conjugated diene hydrocarbons and derivatives of these polymers are classified in [C08L 9/00](#) - [C08L 21/02](#). Compositions of natural rubbers are classified in [C08L 7/00](#).
- Compositions of unconjugated diene polymers are classified in [C08L 47/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers as defined in group [C08F 36/00](#) are classified in [C08F 279/00](#) - [C08F 279/06](#) (graft copolymers)

References

Limiting references

This place does not cover:

Copolymer of isobutene with minor part of conjugated dienes	C08F 210/12
Copolymers of vinyl aromatic monomers with minor part of conjugated dienes	C08F 212/08
Compositions of homopolymers or copolymers of conjugated diene hydrocarbons and their derivatives; Compositions of natural rubbers	C08L 7/00 - C08L 21/02
Compositions of copolymers of ethene-propene or ethene-propene-diene, e.g. EPM or EPDM rubber	C08L 23/16
Compositions of copolymers of isobutene with minor part of conjugated dienes monomers, e.g. butyl rubber	C08L 23/22
Compositions of unconjugated diene polymers	C08L 47/00
Grafted styrene block copolymer based compositions, e.g. grafted SBS, grafted SEBS or grafted SEPS	C08L 51/006
Styrene block copolymer based compositions, e.g. SBS, SEBS or SEPS	C08L 53/00 - C08L 53/025
ABS (acrylonitrile butadiene styrene) based compositions	C08L 55/02
Coating compositions based on homopolymers or copolymers of conjugated diene hydrocarbons and their derivatives; Coating compositions of natural rubbers	C09D 107/00 - C09D 121/02
Adhesive compositions based on homopolymers or copolymers of conjugated diene hydrocarbons and their derivatives; Adhesive compositions of natural rubbers	C09J 107/00 - C09J 121/02

Informative references

Attention is drawn to the following places, which may be of interest for search:

Macromolecular homopolymers or copolymers obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08F 10/00 - C08F 38/04
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Macromolecular homopolymers obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08F 110/00 - C08F 138/04
Macromolecular copolymers obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08F 210/00 - C08F 238/04
Graft copolymers that are obtained by polymerising monomers on to polymers of conjugated dienes	C08F 279/00 - C08F 279/06
Macromolecular compounds obtained by polymerising monomers on to polymers modified by introduction of aliphatic unsaturated end or side groups	C08F 290/048 , C08F 290/128
Block copolymers	C08F 293/00 - C08F 297/086
Chemical compositions of tyres	B60C 1/00
Treatment or chemical modification of rubbers	C08C 1/00 - C08C 19/44

Special rules of classification

- Polymers of [C08F 32/00](#) (homo- or copolymers of cyclic compounds having no unsaturated aliphatic radical in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic ring system) take precedence over [C08F 36/00](#).
- In [C08F 36/00](#) - [C08F 36/22](#), in the absence of an indication to the contrary a polymer or a process is classified in the last appropriate place.
- in [C08F 36/00](#) - [C08F 36/22](#) the method of polymerisation may be indicated using the subdivisions of [C08F 2/00](#) - [C08F 2/58](#) in the form of a Combination set, e.g. ([C08F 36/04](#), [C08F 2/24](#)).
- in [C08F 36/00](#) - [C08F 36/22](#) the nature of the polymerisation catalyst may be indicated using the subdivisions 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 a Combination set, e.g. ([C08F 36/04](#), [C08F 4/48](#)).
- in [C08F 36/00](#) - [C08F 36/22](#) a [C08F](#) Indexing code for the monomer in minority is given when appropriate, e.g. a copolymer containing 70% butadiene, 30% acrylonitrile will be classified in ([C08F 236/06](#), [C08F 220/44](#)).

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

ABS	Acrylonitrile butadiene styrene
BR	Butadiene rubber
CR	Chloroprene rubber
IIR	Butyl rubber
IR	Isoprene rubber
NBR	Acrylonitrile butadiene rubber
NR	Natural rubber
SAN	Styrene acrylonitrile copolymer
SBR	Styrene butadiene rubber

C08F 38/00

Homopolymers and copolymers of compounds having one or more carbon-to-carbon triple bonds

Definition statement

This place covers:

E.g. acetylene or vinylacetylene.

C08F 110/00

Homopolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond

Definition statement

This place covers:

documents relating to homopolymers of olefins according to the following two cases:

- if the document discloses examples of homopolymers defined by properties of its own, which are expressed by parameters (e.g. molecular weight or density), or
- if the document is related to general aspects of the process and / or catalyst, in particular in combination with a process and / or catalyst class in the form of a Combination set.

Relationships with other classification places

Films containing a polymer classified in [C08F 110/00](#) or subgroups, are classified in [C08J 5/18](#) with Combination set when applicable, if the polymer is not claimed as such.

Fibres containing a polymer classified in [C08F 110/00](#) or subgroups, are classified in [D01F](#), if the polymer is not claimed as such.

References

Limiting references

This place does not cover:

Polymer compositions containing polymers, classified in the groups C08F 110/00 or subgroups	C08L 23/00
Coating compositions containing polymers, classified in the groups C08F 110/00 or subgroups	C09D 123/00
Adhesive compositions containing polymers, classified in the groups C08F 110/00 or subgroups	C09J 123/00

Special rules of classification

In the groups [C08F 110/00-C08F 110/14](#), the polymers obtained in the examples described in the experimental section of the document to be classified are classified with the corresponding Indexing Codes in [C08F](#), in the form of Combination sets. The Combination set base symbol is the monomer in majority, followed by the Indexing Code(s) describing the other monomer(s) in the decreasing order of their amounts, followed by the symbol describing the corresponding properties in [C08F 2500/00-C08F 2500/26](#).

Example: a homopolymer of ethylene having a high molecular weight and a narrow molecular weight distribution is classified in ([C08F 110/02](#), [C08F 2500/01](#), [C08F 2500/03](#)).

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 Combination sets, e.g. ([C08F 110/02](#), [C08F 2/001](#)).

If the process for the preparation of polymers classified in [C08F 110/00](#) or subgroups is an important subject-matter, the document is classified in the form of a Combination set, e.g. ([C08F 110/02](#), [C08F 4/69](#)).

If the catalyst for the preparation of polymers, classified in [C08F 10/00](#)-[C08F 10/14](#), is an important subject-matter, the document is classified in the form of a Combination set, e.g. ([C08F 10/02](#), [C08F 4/69](#)).

Attention is also drawn to the definitions of [C08F 2/00](#) and [C08F 4/00](#).

If classification is made for a use, e.g. fibre or film, the polymer as such should be indexed with the corresponding Indexing Codes in [C08F](#).

C08F 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

Definition statement

This place covers:

Homopolymers being derived from one or more unsaturated aliphatic radicals, each radical having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring;

Homopolymers based on allyl benzene or beta-alkyl-vinyl aromatic monomers, e.g. 1-propenylbenzene are classified in [C08F 112/06](#);

Poly(alpha-alkyl vinyl aromatic) homopolymers, e.g. poly(alpha-methyl-styrenes) are classified in [C08F 112/12](#), Poly(alpha-alkyl vinyl aromatic) homopolymers with a ring substituted by an alkyl radical are classified in [C08F 112/12](#), Vinyl aromatic homopolymers with a ring substituted by an alkyl radical are classified in [C08F 112/12](#);

Homopolymers based on vinyl naphthalene, acenaphthalene or vinyl anthracene are classified in [C08F 112/32](#).

Relationships with other classification places

- Subject matter limited to homopolymers and copolymers is classified in [C08F 12/00](#) - [C08F 12/36](#).
- Subject matter limited to copolymers is classified in [C08F 212/00](#) - [C08F 212/36](#).
- Compositions of the polymers of [C08F 112/00](#) are classified in [C08L 25/00](#) - [C08L 25/18](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 112/00](#) are classified in [C08F 257/00](#) - [C08F 257/02](#) (graft copolymers).
- Copolymers having as the minor part 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 are classified in [C08F 212/00](#) - [C08F 212/36](#).

References

Limiting references

This place does not cover:

Chemical modification by after-treatment of polymers of C08F 112/00	(C08F 8/00 , C08F 112/00) - (C08F 8/50 , C08F 112/36)
Copolymers having as the minor part 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	C08F 212/00 - C08F 212/36
Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group C08F 112/00	C08F 257/00 - C08F 257/02
Graft copolymers that are obtained by grafting vinyl aromatic monomers on to polymers of conjugated dienes	C08F 279/04 - C08F 279/06
Macromolecular compounds obtained by polymerising monomers on to polymers modified by introduction of aliphatic unsaturated end or side groups	C08F 290/044 , C08F 290/124
Block copolymers	C08F 293/00 - C08F 297/086
Making expandable particles comprising polymers of C08F 112/00	(C08J 9/16 , C08L 25/00) - (C08J 9/20 , C08L 25/18)
Compositions of homopolymers or 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; Compositions of derivatives of such polymers	C08L 25/00 - C08L 25/18
Coating compositions based on homopolymers or 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; Coating compositions based on derivatives of such polymers	C09D 125/00 - C09D 125/18
Adhesives based on homopolymers or 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; Adhesives based on derivatives of such polymers	C09J 125/00 - C09J 125/18

Informative references

Attention is drawn to the following places, which may be of interest for search:

Post-polymerisation treatments of polymers of C08F 112/00	(C08F 6/00 , C08L 25/00) - (C08F 6/28 , C08L 25/18)
Copolymers of maleic anhydride with minor part of vinyl aromatic monomers	C08F 222/08
Copolymers of conjugated dienes with minor part of vinyl aromatic monomers	C08F 236/10
Layered products essentially comprising synthetic resin	B32B 27/08 , B32B 27/30
Treatment or chemical modification of rubbers (e.g. SBR rubber)	C08C
Working-up of macromolecular substances to porous or cellular articles or materials comprising polymers of C08F 112/00 ; After-treatment thereof	C08J 9/0061

Compositions of copolymers of conjugated diene hydrocarbons with styrene, e.g. SBR rubber	C08L 9/06 - C08L 9/08
Compositions of copolymers of ethene with aromatic monomers	C08L 23/0838
Compositions of copolymers of allyl alcohol with vinyl-aromatic monomers	C08L 29/08
Grafted styrene block copolymer based compositions, e.g. grafted SBS, grafted SEBS or grafted SEPS	C08L 51/006
Compositions of graft copolymers with graft base being a rubber, e.g. high impact polystyrene type based compositions (HIPS)	C08L 51/04
Styrene block copolymer based compositions, e.g. SBS, SEBS or SEPS	C08L 53/00 - C08L 53/025
ABS (acrylonitrile butadiene styrene) based compositions	C08L 55/02
Artificial filaments or fibres comprising aromatic vinyl resins	D01F 6/22 , D01F 6/42 , D01F 6/56
Insulators consisting of aromatic vinyl resins	H01B 3/442

Special rules of classification

- In [C08F 112/00-C08F 112/36](#) the method of polymerisation may be indicated using the subdivisions of [C08F 2/00-C08F 2/60](#) in the form of a Combination set, e.g. ([C08F 112/08](#), [C08F 2/20](#)).
- In [C08F 112/00-C08F 112/36](#) the nature of the polymerisation catalyst may be indicated using the subdivisions of [C08F 4/00-C08F 4/82](#) in the form of a Combination set, e.g. ([C08F 112/04](#), [C08F 4/62](#)).
- If the subject-matter covers homopolymers and copolymers a [C08F 12/00](#) Indexing code should be given, homopolymers only are classified in [C08F 112/00](#), copolymers only are classified in [C08F 212/00](#);
- One (or more) Indexing code(s) in [C08F 212/00](#) has (have) to be given if, in a copolymer, the monomer(s) in minority belong(s) to the present subgroup;
- As regards heteroatom substitution ([C08F 112/14](#)) the classification scheme of [C08F 12/00](#) is more detailed concerning the type of heteroatom, i.e. [C08F 12/14-C08F 12/30](#). Thus, it is recommended to additionally give a symbol of [C08F 12/14 - C08F 12/30](#) if more detailed information can be provided thereby.

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

ABS	Acrylonitrile butadiene styrene
AMS	alpha-Methyl-styrene or isopropenyl styrene
at-PS, a-PS, aPS	Atactic polystyrene
DVB	Divinyl benzene
HIPS	High impact polystyrene
it-PS, i-PS, iPS	Isotactic polystyrene
PS	Polystyrene
SAN	Styrene acrylonitrile copolymer
SBR	Styrene butadiene rubber
st-PS, s-PS, sPS	Syndiotactic polystyrene
SBS	Styrene butadiene styrene block copolymer

SIS	Styrene isoprene styrene block copolymer
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C08F 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

Definition statement

This place covers:

E.g. monomers containing chlorine, vinyl chloride, vinylidene chloride, 1,2-dichloroethene, vinyl fluoride, vinylidene fluoride, trifluorochloroethene, tetrafluoroethene or hexafluoropropene.

Special rules of classification

In [C08F 114/00](#) no subdivision for indicating the method of polymerisation is used.

C08F 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

Definition statement

This place covers:

Besides said homopolymers also the processes of their preparation.

Relationships with other classification places

Homopolymers and copolymers are classified in [C08F 16/00](#) and copolymers only are classified in [C08F 216/00](#).

Compositions of the polymers of [C08F 116/00](#) are classified in [C08L 29/00](#).

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 12/00](#) are classified in [C08F 261/00](#) (graft copolymers).

Special rules of classification

- [C08F 116/00](#) is to be used for homopolymers only.

C08F 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 carbonic acid or of a haloformic acid

Definition statement

This place covers:

Besides said homopolymers also the processes of their preparation.

Relationships with other classification places

Homopolymers and copolymers are classified in [C08F 18/00](#) and copolymers only are classified in [C08F 218/00](#).

Compositions of the polymers of [C08F 118/00](#) are classified in [C08L 31/00](#).

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 18/00](#) are classified in [C08F 263/00](#) (graft copolymers).

Special rules of classification

[C08F 118/00](#) to be used for homopolymers only.

C08F 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

Definition statement

This place covers:

Besides said homopolymers also the processes of their preparation.

Relationships with other classification places

Homopolymers and copolymers are classified in [C08F 20/00](#) and copolymers only are classified in [C08F 220/00](#).

Compositions of the polymers of [C08F 120/00](#) are classified in [C08L 33/00](#).

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 20/00](#) are classified in [C08F 263/00](#) (graft copolymers).

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 carboxyl radical and containing at least one other carboxyl radical in the molecule; Salts, anhydrides, esters, amides, imides or nitriles thereof

Definition statement

This place covers:

Besides said homopolymers also the processes of their preparation.

Relationships with other classification places

Homopolymers and copolymers are classified in [C08F 22/00](#) and copolymers only are classified in [C08F 222/00](#).

Compositions of the polymers of [C08F 122/00](#) are classified in [C08L 35/00](#).

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 20/00](#) are classified in [C08F 267/00](#) (graft copolymers).

C08F 124/00

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 heterocyclic ring containing oxygen (cyclic esters of polyfunctional acids [C08F 118/00](#); cyclic anhydrides of unsaturated acids [C08F 120/00](#), [C08F 122/00](#))

Definition statement

This place covers:

Besides said homopolymers also the processes of their preparation.

Relationships with other classification places

Homopolymers and copolymers are classified in [C08F 24/00](#), and copolymers only are classified in [C08F 224/00](#)

Compositions of the polymers of [C08F 124/00](#) are classified in [C08L 37/00](#)

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 20/00](#) are classified in [C08F 269/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Cyclic esters of polyfunctional	C08F 18/00
Cyclic anhydrides of unsaturated acids	C08F 20/00

C08F 126/00

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

Definition statement

This place covers:

Besides said homopolymers also the processes of their preparation.

Relationships with other classification places

Homopolymers and copolymers are classified in [C08F 26/00](#), and copolymers only are classified in [C08F 226/00](#).

Compositions of the polymers of [C08F 126/00](#) are classified in [C08L 39/00](#).

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 18/00](#) are classified in [C08F 271/00](#) (graft copolymers).

Special rules of classification

Please see the Rules for [C08F 26/00](#).

C08F 128/00

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 bond to sulfur or by a heterocyclic ring containing sulfur

Definition statement

This place covers:

Besides said homopolymers also the processes of their preparation.

Relationships with other classification places

Homopolymers and copolymers are classified in [C08F 28/00](#), and copolymers only are classified in [C08F 228/00](#).

Compositions of the polymers of [C08F 128/00](#) are classified in [C08L 41/00](#).

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 18/00](#) are classified in [C08F 273/00](#) (graft copolymers).

Special rules of classification

Please see the Rules for [C08F 28/00](#).

C08F 130/00

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)

Definition statement

This place covers:

Besides said homopolymers also the processes of their preparation.

Relationships with other classification places

Homopolymers and copolymers are classified in [C08F 30/00](#), and copolymers only are classified in [C08F 230/00](#).

Compositions of the polymers of [C08F 130/00](#) are classified in [C08L 43/00](#).

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 18/00](#) are classified in [C08F 275/00](#) (graft copolymers).

Special rules of classification

Please see the Rules for [C08F 30/00](#).

C08F 132/00

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

Definition statement

This place covers:

Besides said homopolymers also the processes of their preparation.

Relationships with other classification places

Homopolymers and copolymers are classified in [C08F 32/00](#) and copolymers only are classified in [C08F 232/00](#).

Compositions of the polymers of [C08F 132/00](#) are classified in [C08L 45/00](#).

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 32/00](#) are classified in [C08F 277/00](#) (graft copolymers).

Special rules of classification

Please see the Rules for [C08F 32/00](#).

Homopolymers of norbornene are classified in [C08F 132/08](#).

C08F 134/00

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](#))

Definition statement

This place covers:

Besides said homopolymers also the processes of their preparation.

Relationships with other classification places

Homopolymers and copolymers are classified in [C08F 34/00](#), and copolymers only are classified in [C08F 234/00](#).

Compositions of the polymers of [C08F 134/00](#) are classified in [C08L 49/00](#).

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 34/00](#) are classified in [C08F 277/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Cyclic esters of polyfunctional acids	C08F 18/00
Cyclic anhydrides or imides	C08F 22/00

Special rules of classification

Please see the Rules of [C08F 34/00](#).

C08F 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)

Relationships with other classification places

- Homopolymers or copolymers are classified in [C08F 36/00](#) - [C08F 36/22](#).
- Copolymers only are classified in [C08F 236/00](#) - [C08F 236/22](#).
- Compositions of homo- or copolymers of conjugated diene hydrocarbons and derivatives of these polymers are classified in [C08L 9/00](#) - [C08L 21/02](#).
- Compositions of natural rubbers are classified in [C08L 7/00](#).
- Compositions of unconjugated diene polymers are classified in [C08L 47/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers as defined in group [C08F 136/00](#) are classified in [C08F 279/00](#) - [C08F 279/06](#) (graft copolymers).

References

Limiting references

This place does not cover:

Compositions of homopolymers or copolymers of conjugated diene hydrocarbons and their derivatives; Compositions of natural rubbers	C08L 7/00 - C08L 21/02
Compositions of copolymers of ethene-propene or ethene-propene-diene, e.g. EPM or EPDM rubber	C08L 23/16
Compositions of copolymers of isobutene with minor part of conjugated dienes monomers, e.g. butyl rubber	C08L 23/22
Compositions of unconjugated diene polymers	C08L 47/00
Grafted styrene block copolymer based compositions, e.g. grafted SBS, grafted SEBS or grafted SEPS	C08L 51/006
Styrene block copolymer based compositions, e.g. SBS, SEBS or SEPS	C08L 53/00 - C08L 53/025
ABS (acrylonitrile butadiene styrene) based compositions	C08L 55/02
Coating compositions based on homopolymers or copolymers of conjugated diene hydrocarbons and their derivatives; Coating compositions of natural rubbers	C09D 107/00 - C09D 121/02
Adhesive compositions based on homopolymers or copolymers of conjugated diene hydrocarbons and their derivatives; Adhesive compositions of natural rubbers	C09J 107/00 - C09J 121/02

Informative references

Attention is drawn to the following places, which may be of interest for search:

Macromolecular homopolymers or copolymers obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08F 10/00 - C08F 38/04
Macromolecular homopolymers obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08F 110/00 - C08F 138/04

Macromolecular copolymers obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08F 210/00 - C08F 238/04
Graft copolymers that are obtained by polymerising monomers on to polymers of conjugated dienes	C08F 279/00 - C08F 279/06
Macromolecular compounds obtained by polymerising monomers on to polymers modified by introduction of aliphatic unsaturated end or side groups	C08F 290/048 , C08F 290/128
Block copolymers	C08F 293/00 - C08F 297/086
Chemical compositions of tyres	B60C 1/00
Treatment or chemical modification of rubbers	C08C 1/00 - C08C 19/44

Special rules of classification

- Polymers of [C08F 132/00](#) (homopolymers of cyclic compounds having no unsaturated aliphatic radical in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic ring system) take precedence over [C08F 136/00](#).
- In [C08F 136/00](#) - [C08F 136/22](#), in the absence of an indication to the contrary a polymer or a process is classified in the last appropriate place.
- In [C08F 136/00](#) - [C08F 136/22](#) the method of polymerisation may be indicated using the subdivisions of [C08F 2/00](#) - [C08F 2/58](#) in the form of a Combination set, e.g. ([C08F 136/06](#), [C08F 2/24](#)).
- In [C08F 136/00](#) - [C08F 136/22](#) the nature of the polymerisation catalyst may be indicated using the subdivisions 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 a Combination set, e.g. ([C08F 136/06](#), [C08F 4/48](#)).

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

ABS	Acrylonitrile butadiene styrene
BR	Butadiene rubber
CR	Chloroprene rubber
IIR	Butyl rubber
IR	Isoprene rubber
NBR	Acrylonitrile butadiene rubber
NR	Natural rubber
SAN	Styrene acrylonitrile copolymer
SBR	Styrene butadiene rubber

C08F 138/00

Homopolymers of compounds having one or more carbon-to-carbon triple bonds

Definition statement

This place covers:

E.g. acetylene or vinylacetylene.

C08F 210/00

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

Definition statement

This place covers:

documents relating to copolymers of olefins according to the following two cases:

- if the document discloses examples of copolymers defined by properties of its own, which are expressed by parameters (e.g. molecular weight or density), or
- if the document is related to general aspects of the process and / or catalyst, in particular in combination with a process and / or a catalyst class in the form of a Combination set.

Relationships with other classification places

Films containing a polymer classified in [C08F 210/00](#) or subgroups, are classified in [C08J 5/18](#) with Combination sets when applicable, if the polymer is not claimed as such.

Fibres containing a polymer classified in [C08F 210/00](#) or subgroups, are classified in [D01F](#), if the polymer is not claimed as such.

References

Limiting references

This place does not cover:

Polymer compositions containing polymers classified in the groups C08F 210/00 or subgroups	C08L 23/00
Coating compositions containing polymers classified in the groups C08F 210/00 or subgroups	C09D 123/00
Adhesive compositions containing polymers, classified in the groups C08F 210/00 or subgroups	C09J 123/00

Special rules of classification

In the groups [C08F 210/00-C08F 210/14](#), the polymers obtained in the examples described in the experimental section of the document to be classified are classified with the corresponding Indexing Codes in [C08F](#), in the form of Combination sets. The Combination set base symbol is the monomer in majority, followed by the Indexing Code(s) describing the other monomer(s) in the decreasing order of their amounts, followed by the symbol describing the corresponding properties in [C08F 2500/00-C08F 2500/26](#).

Example: a copolymer of ethylene and pentene having a high molecular weight, a narrow molecular weight distribution and a specified melt flow index is classified in ([C08F 210/16](#), [C08F 210/14](#), [C08F 2500/01](#), [C08F 2500/12](#)).

In groups [C08F 210/00](#) - [C08F 210/14](#) 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 Combination sets, e.g. ([C08F 210/02](#), [C08F 4/651](#))

If the process for the preparation of polymers classified in [C08F 210/00](#) or subgroups, is an important subject-matter, the document is classified in the form of a Combination set, e.g. ([C08F 210/02](#), [C08F 2/001](#)).

If the catalyst for the preparation of polymers, classified in [C08F 210/00-C08F 210/14](#), is an important subject-matter, the document is classified in the form of a Combination set, e.g. ([C08F 210/02](#), [C08F 4/69](#)).

Attention is also drawn to the definitions of [C08F 2/00](#) and [C08F 4/00](#).

If classification is made for a use, e.g. fibre or film, the polymer as such should be indexed with the corresponding Indexing Codes in [C08F](#).

In the subgroups [C08F 210/16](#) and [C08F 210/18](#), ethylene copolymers with alpha-olefins and dienes are classified. According to the definition, this should also be the case if the alpha-olefin not being ethylene is in majority, However, for reasons of clarity and completeness, propylene-ethylene copolymers with propylene in majority should be classified in [C08F 210/06](#) and in [C08F 210/16](#).

Ethylene-diene copolymers (without a further alpha olefin) are classified in [C08F 210/02](#).

C08F 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

Definition statement

This place covers:

Copolymers having being derived from one or more unsaturated aliphatic radicals as the major part, each radical having only one carbon-to-carbon double bond, and at least one being terminated by an aromatic carbocyclic ring.

Copolymers based on allyl benzene and/or beta-alkyl-vinyl aromatic monomers, e.g. 1-propenylbenzene are classified in [C08F 212/06](#). Poly(alpha-alkyl vinyl aromatic) copolymers, e.g. poly(alpha-methyl-styrenes) are classified in [C08F 212/12](#), Poly(alpha-alkyl vinyl aromatic) copolymers with a ring substituted by an alkyl radical are classified in [C08F 212/12](#), Vinyl aromatic copolymers with a ring substituted by an alkyl radical are classified in [C08F 212/12](#).- SAN types (styrene acrylonitrile copolymers) are classified in [C08F 212/10](#).- Copolymers based on vinyl aromatic monomers that are ring substituted by an acrylic group are classified in [C08F 212/145](#).- Copolymers based on vinyl naphthalene, acenaphthalene or vinyl anthracene are classified in [C08F 212/32](#).

Relationships with other classification places

- Subject-matter limited to homopolymers and copolymers is classified in [C08F 12/00](#) - [C08F 12/36](#).
- Subject matter limited to homopolymers is classified in [C08F 112/00](#) - [C08F 112/36](#);
- Compositions of the polymers of [C08F 212/00](#) are classified in [C08L 25/00](#) - [C08L 25/18](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 212/00](#) are classified in [C08F 257/00](#) - [C08F 257/02](#) (graft copolymers).
- Copolymers having as the minor part 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 are classified in [C08F 212/00](#) - [C08F 212/36](#) Indexing codes.

References

Limiting references

This place does not cover:

Chemical modification by after-treatment of polymers of C08F 212/00	(C08F 8/00 , C08F 212/00)- (C08F 8/50 , C08F 212/36)
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Copolymers having as the minor part 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	C08F 212/00 - C08F 212/36
Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group C08F 212/00	C08F 257/00 - C08F 257/02
Graft copolymers that are obtained by grafting vinyl aromatic monomers on to polymers of conjugated dienes	C08F 279/04 - C08F 279/06
Macromolecular compounds obtained by polymerising monomers on to polymers modified by introduction of aliphatic unsaturated end or side groups	C08F 290/044 , C08F 290/124
Block copolymers	C08F 293/00 - C08F 297/086
Making expandable particles comprising polymers of C08F 112/00	(C08J 9/16 , C08L 25/00) - (C08J 9/20 , C08L 25/18)
Compositions of homopolymers or 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; Compositions of derivatives of such polymers	C08L 25/00 - C08L 25/18
Coating compositions based on homopolymers or 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; Coating compositions based on derivatives of such polymers	C09D 125/00 - C09D 125/18
Adhesives based on homopolymers or 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; Adhesives based on derivatives of such polymers	C09J 125/00 - C09J 125/18

Informative references

Attention is drawn to the following places, which may be of interest for search:

Post-polymerisation treatments of polymers of C08F 212/00	(C08F 6/00 , C08L 25/00)- (C08F 6/28 , C08L 25/18)
Copolymers of maleic anhydride with minor part of vinyl aromatic monomers	C08F 222/08
Copolymers of conjugated dienes with minor part of vinyl aromatic monomers	C08F 236/10
Layered products essentially comprising synthetic resin	B32B 27/08 , B32B 27/30
Treatment or chemical modification of rubbers, e.g. SBR rubber	C08C
Working-up of macromolecular substances to porous or cellular articles or materials comprising polymers of C08F 212/00 ; After-treatment thereof	C08J 9/0061
Compositions of copolymers of conjugated diene hydrocarbons with styrene (SBR rubber)	C08L 9/06 - C08L 9/08
Compositions of copolymers of ethene with aromatic monomers	C08L 23/0838
Compositions of copolymers of allyl alcohol with vinyl-aromatic monomers	C08L 29/08
Grafted styrene block copolymer based compositions, e.g. grafted SBS, grafted SEBS or grafted SEPS	C08L 51/006

Compositions of graft copolymers with graft base being a rubber, e.g. high impact polystyrene type based compositions (HIPS)	C08L 51/04
Styrene block copolymer based compositions, e.g. SBS, SEBS or SEPS	C08L 53/00 - C08L 53/025
ABS (acrylonitrile butadiene styrene) based compositions	C08L 55/02
Artificial filaments or fibres comprising aromatic vinyl resins	D01F 6/22 , D01F 6/42 , D01F 6/56
Insulators consisting of aromatic vinyl resins	H01B 3/442

Special rules of classification

- In [C08F 212/00-C08F 212/36](#) the method of polymerisation may be indicated using the subdivisions of [C08F 2/00-C08F 2/60](#) in the form of a Combination set, e.g. ([C08F 212/08](#), [C08F 2/20](#)).
- In [C08F 212/00-C08F 212/36](#) the nature of the polymerisation catalyst may be indicated using the subdivisions of [C08F 4/00-C08F 4/82](#) in the form of a Combination set, e.g. ([C08F 212/04](#), [C08F 4/62](#)).
- Copolymers only are classified in [C08F 212/00](#).
- Attention is drawn to the third paragraph of the Rules of the subclass.
- One (or more) Indexing code(s) in [C08F 212/00](#) is/are given if, in a copolymer, the monomer(s) in minority belong(s) to the present subgroup.
- One (or more) Indexing code(s) in [C08F 210/00](#) - [C08F 238/04](#) is /are given for other monomer(s) in minority of a copolymer whose monomer in majority belongs to the present subgroup.
- As regards heteroatom substitution ([C08F 212/14](#)) the classification scheme of [C08F 12/00](#) is more detailed concerning the type of heteroatom, i.e. [C08F 12/14](#) - [C08F 12/30](#). Thus, it is recommended to additionally give a symbol of [C08F 12/14](#) - [C08F 12/30](#) if more detailed information can be provided thereby.

Synonyms and Keywords

ABS	Acrylonitrile butadiene styrene
AMS	alpha-Methyl-styrene or isopropenyl styrene
at-PS, a-PS, aPS	Atactic polystyrene
DVB	Divinyl benzene
HIPS	High impact polystyrene
it-PS, i-PS, iPS	Isotactic polystyrene
PS	Polystyrene
SAN	Styrene acrylonitrile copolymer
SBR	Styrene butadiene rubber
st-PS, s-PS, sPS	Syndiotactic polystyrene
SBS	Styrene butadiene styrene block copolymer
SIS	Styrene isoprene styrene block copolymer

C08F 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

Definition statement

This place covers:

E.g. vinyl chloride, vinylidene chloride, 1,2-dichloroethene, vinyl fluoride, vinylidene fluoride, trifluorochloroethene, tetrafluoroethene or hexafluoropropene.

Besides said copolymers also the processes of their preparation.

Special rules of classification

In [C08F 214/00](#) no subdivision for indicating the method of polymerisation is used.

C08F 216/00

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 alcohol, ether, aldehyde, ketonic, acetal or ketal radical

Definition statement

This place covers:

Besides said copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 16/00](#) and homopolymers only are classified in [C08F 116/00](#).
- Compositions of the polymers of [C08F 216/00](#) are classified in [C08L 29/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 12/00](#) are classified in [C08F 261/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Copolymers of compounds having as minor part 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.	C08F 216/00- C08F 216/38
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Special rules of classification

[C08F 216/00](#) should be used for copolymers only.

Attention is drawn to the Rules of the subclass, in particular the third paragraph. To indicate that a minor part of copolymers has one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least one and at least one being terminated by an alcohol, ether, aldehyde, ketonic, acetal or ketal radical, a [C08F 216/00](#) Indexing code can be given.

C08F 218/00

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

Definition statement

This place covers:

Besides said copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 18/00](#).
- Homopolymers only are classified in [C08F 118/00](#).
- Compositions of the polymers of [C08F 218/00](#) are classified in [C08L 31/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 18/00](#) are classified in [C08F 263/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Copolymers having a minor part of 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	C08F 218/00 - C08F 2218/245
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Special rules of classification

Attention is drawn to the Rules of the subclass, in particular the third paragraph. To indicate that a minor part of copolymers has 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 a [C08F 218/00](#) Indexing code can be given.

C08F 220/00

Copolymers 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

Definition statement

This place covers:

Besides said copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 20/00](#).
- Homopolymers only are classified in [C08F 120/00](#).
- Compositions of the polymers of [C08F 220/00](#) are classified in [C08L 33/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 20/00](#) are classified in [C08F 263/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Copolymers 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	C08F 220/00 - C08F 220/70
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Special rules of classification

- Please see the Rules under [C08F 218/00](#).

Further subdivisions:

- Di- or polyacrylates are classified in [C08F 222/10](#).
- Di or polyacrylamide are classified in [C08F 222/385](#)

C08F 222/00

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 carboxyl radical and containing at least one other carboxyl radical in the molecule; Salts, anhydrides, esters, amides, imides, or nitriles thereof

Definition statement

This place covers:

Besides said copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 22/00](#).
- Homopolymers only are classified in [C08F 122/00](#).
- Compositions of the polymers of [C08F 222/00](#) are classified in [C08L 35/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 20/00](#) are classified in [C08F 267/00](#) graft copolymers).

References

Limiting references

This place does not cover:

Copolymers of compounds having one or more unsaturated aliphatic radicals each having only one carbon-to-carbon double bond, 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 nitriles thereof	C08F 222/00 - C08F 222/408
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Special rules of classification

- Please see the Rules under [C08F 218/00](#).

Further subdivisions:

- Di- or polyacrylates are classified in [C08F 222/1006](#).

- Di or polyacrylamide are classified in [C08F 222/385](#).
- Cyanoacrylate are classified in [C08F 222/32](#).

C08F 224/00

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 heterocyclic ring containing oxygen (cyclic esters of polyfunctional acids [C08F 218/00](#); cyclic anhydrides of unsaturated acids [C08F 220/00](#), [C08F 222/00](#))

Definition statement

This place covers:

E.g. methylene lactones.

Besides said copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 24/00](#).
- Homopolymers only are classified in [C08F 124/00](#).
- Compositions of the polymers of [C08F 224/00](#) are classified in [C08L 37/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 24/00](#) are classified in [C08F 269/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Copolymers of compounds having a minor part of 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	C08F 224/00
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C08F 226/00

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 single or double bond to nitrogen or by a heterocyclic ring containing nitrogen

Definition statement

This place covers:

Besides said copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 26/00](#).
- Homopolymers only are classified in [C08F 126/00](#).
- Compositions of the polymers of [C08F 226/00](#) are classified in [C08L 39/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 226/00](#) are classified in [C08F 271/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Homopolymers and copolymers of compounds having a minor part of 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	C08F 226/00 - C08F 226/12
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Special rules of classification

Please see the Rules under [C08F 218/00](#).

C08F 228/00

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 bond to sulfur or by a heterocyclic ring containing sulfur

Definition statement

This place covers:

Besides said copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 28/00](#).
- Homopolymers only are classified in [C08F 128/00](#).
- Compositions of the polymers of [C08F 228/00](#) are classified in [C08L 41/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 28/00](#) are classified in [C08F 273/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Copolymers of compounds having a minor part of 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 sulfur or by a heterocyclic ring containing sulfur	C08F 228/00
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Special rules of classification

Please see the Rules under [C08F 218/00](#).

C08F 230/00

Copolymers 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)

Definition statement

This place covers:

Besides said copolymers also the processes of their preparation.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 30/00](#).
- Homopolymers only are classified in [C08F 130/00](#).
- Compositions of the polymers of [C08F 230/00](#) are classified in [C08L 43/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 30/00](#) are classified in [C08F 275/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Copolymers of compounds having in minor parts 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)	C08F 230/00 - C08F 230/10
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Special rules of classification

Please see the Rules under [C08F 218/00](#).

C08F 232/00

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

Definition statement

This place covers:

Copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond in a carbocyclic ring system.

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 32/00](#).
- Homopolymers only are classified in [C08F 132/00](#).
- Compositions of the polymers of [C08F 232/00](#) are classified in [C08L 45/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 32/00](#) are classified in [C08F 277/00](#) (graft copolymers)

References

Limiting references

This place does not cover:

This group does not cover, but monomers in minority obtain the following Indexing Code-Indexing Code:

Copolymers of compounds having in minor parts 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)	C08F 232/00 - C08F 232/08
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Special rules of classification

For Homo- and copolymers see [C08F 218/00](#).

Copolymers of norbornene are classified in [C08F 232/08](#).

C08F 234/00

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 218/00](#); cyclic anhydrides or imides [C08F 222/00](#))

Relationships with other classification places

- Homopolymers and copolymers are classified in [C08F 34/00](#).
- Homopolymers only are classified in [C08F 134/00](#).
- Compositions of the polymers of [C08F 134/00](#) are classified in [C08L 49/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers of monomers as defined in group [C08F 34/00](#) are classified in [C08F 277/00](#) (graft copolymers).

References

Limiting references

This place does not cover:

Copolymers of minor parts 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	C08F 234/00 - C08F 234/04
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Special rules of classification

Please see the Rules under [C08F 34/00](#).

C08F 236/00

Copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds ([C08F 232/00](#) takes precedence)

Definition statement

This place covers:

- Copolymers of compounds having as the major part one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds

Relationships with other classification places

- Homopolymers or copolymers are classified in [C08F 36/00](#) - [C08F 36/22](#).
- Homopolymers only are classified in [C08F 136/00](#) - [C08F 136/22](#).
- Compositions of homo- or copolymers of conjugated diene hydrocarbons and derivatives of these polymers are classified in [C08L 9/00](#) - [C08L 21/02](#). Compositions of natural rubbers are classified in [C08L 7/00](#).
- Compositions of unconjugated diene polymers are classified in [C08L 47/00](#).
- Macromolecular compounds obtained by polymerising monomers on to polymers as defined in group [C08F 36/00](#) are classified in [C08F 279/00](#) - [C08F 279/06](#) (graft copolymers)

References

Limiting references

This place does not cover:

Copolymer of isobutene with minor part of conjugated dienes	C08F 210/12
Copolymers of vinyl aromatic monomers with minor part of conjugated dienes	C08F 212/08
Compositions of homopolymers or copolymers of conjugated diene hydrocarbons and their derivatives; compositions of natural rubbers	C08L 7/00 - C08L 21/02
Compositions of copolymers of ethene-propene or ethene-propene-diene (EPM or EPDM rubber)	C08L 23/16
Compositions of copolymers of isobutene with minor part of conjugated dienes monomers (butyl rubber)	C08L 23/22
Compositions of unconjugated diene polymers	C08L 47/00
Grafted styrene block copolymer based compositions (e.g. grafted SBS, grafted SEBS, grafted SEPS)	C08L 51/006
Styrene block copolymer based compositions (e.g. SBS, SEBS, SEPS)	C08L 53/00 - C08L 53/025
ABS (acrylonitrile butadiene styrene) based compositions	C08L 55/02
Coating compositions based on homopolymers or copolymers of conjugated diene hydrocarbons and their derivatives; coating compositions of natural rubbers	C09D 107/00 - C09D 121/02
Adhesive compositions based on homopolymers or copolymers of conjugated diene hydrocarbons and their derivatives; adhesive compositions of natural rubbers	C09J 107/00 - C09J 121/02

Informative references

Attention is drawn to the following places, which may be of interest for search:

Macromolecular homopolymers or copolymers obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08F 10/00 - C08F 38/04
Macromolecular homopolymers obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08F 110/00 - C08F 138/04
Macromolecular copolymers obtained by reactions involving only carbon-to-carbon unsaturated bonds	C08F 210/00 - C08F 238/04
Graft copolymers that are obtained by polymerising monomers on to polymers of conjugated dienes	C08F 279/00 - C08F 279/06
Macromolecular compounds obtained by polymerising monomers on to polymers modified by introduction of aliphatic unsaturated end or side groups	C08F 290/048 , C08F 290/128
Block copolymers	C08F 293/00 - C08F 297/086
Chemical compositions of tyres	B60C 1/00
Treatment or chemical modification of rubbers	C08C 1/00 - C08C 19/44

Special rules of classification

- Polymers of [C08F 232/00](#) (copolymers of cyclic compounds having no unsaturated aliphatic radical in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic ring system) take precedence over [C08F 236/00](#).
- In [C08F 236/00](#) - [C08F 236/22](#), in the absence of an indication to the contrary a polymer or a process is classified in the last appropriate place.
- In [C08F 236/00](#) - [C08F 236/22](#) the method of polymerisation may be indicated using the subdivisions of [C08F 2/00](#) - [C08F 2/58](#) in the form of Combination set, e.g. ([C08F 236/10](#), [C08F 2/24](#)).
- In [C08F 236/00](#) - [C08F 236/22](#) the nature of the polymerisation catalyst may be indicated using the subdivisions 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 Combination set, e.g. ([C08F 236/10](#), [C08F 4/48](#)).
- In [C08F 236/00](#) - [C08F 236/22](#), a [C08F](#) Indexing code for a monomer in minority is given when appropriate.

Example: A copolymer containing 70% butadiene and 30% acrylic acid will be classified in ([C08F 236/06](#), [C08F 220/06](#)).

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

ABS	Acrylonitrile butadiene styrene
AMS	alpha-Methyl-styrene or isopropenyl styrene
At-PS, a-PS, aPS	Atactic polystyrene
DVB	Divinyl benzene
HIPS	High impact polystyrene
It-PS, i-PS, iPS	Isotactic polystyrene
PS	Polystyrene
SAN	Styrene acrylonitrile copolymer

SBR	Styrene butadiene rubber
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C08F 238/00

Copolymers of compounds having one or more carbon-to-carbon triple bonds

Definition statement

This place covers:

Copolymers of compounds having one or more carbon-to-carbon triple bonds, acetylene or vinylacetylene.

C08F 240/00

Copolymers of hydrocarbons and mineral oils, e.g. petroleum resins

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Compositions of unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds, e.g. copolymers of mineral oil hydrocarbons	C08L 57/00 , C08L 57/02
Compositions of unspecified polymers in minority obtained by reactions only involving carbon-to-carbon unsaturated bonds, e.g. copolymers of mineral oil hydrocarbons	C08L 57/00 , C08L 57/02 , C08L 2666/04
Coating compositions based on unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds, e.g. copolymers of mineral oil hydrocarbons	C09D 157/00 , C09D 157/02
Adhesives based on unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds, e.g. copolymers of mineral oil hydrocarbons	C09J 157/00 , C09J 157/02

C08F 242/00

Copolymers of drying oils with other monomers

Definition statement

This place covers:

Copolymers of semi-drying or drying oils (e.g. linseed oil, tung oil, walnut oil, poppy seed oil, perilla oil, oiticica oil, safflower oil, fish oil, tall oil, soybean oil, sunflower oil, rapeseed oil, dehydrated castor oil) with other monomers.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Copolymers of monocarboxylic acids having ten or more carbon atoms or copolymers of derivatives thereof	C08F 220/62 - C08F 220/70
The Indexing Codes relating to copolymers of monocarboxylic acids having ten or more carbon atoms or copolymers of derivatives thereof	C08F 220/62 - C08F 220/70

Compositions of oils, fats or waxes; compositions of derivatives thereof, e.g. compositions of derivatives of drying oils	C08L 91/00 , C08L 91/005
Compositions of oils, fats or waxes in minority; Compositions of derivatives thereof, e.g. compositions of derivatives of drying oils	C08L 91/00 , C08L 91/005 , C08L 2666/02
Coating compositions based on oils, fats or waxes; coating compositions based on derivatives thereof, e.g. coating compositions based on derivatives of drying oils	C09D 191/00 , C09D 191/005
Chemical modification of drying oils, e.g. by polymerisation	C09F 7/00 , C09F 7/06
Adhesives based on oils, fats or waxes; Adhesives based on derivatives thereof, e.g. adhesives based on derivatives of drying oils	C09J 191/00 , C09J 191/005
Adhesive processes in general, or adhesives in the form of films or foils	C09J 2491/00 - C09J 2491/008

C08F 244/00

Coumarone-indene copolymers

Definition statement

This place covers:

Copolymers containing repeating units derived from the comonomers coumarone and indene.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

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, e.g. having two condensed rings	C08F 32/00 , C08F 32/08
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, e.g. in a ring containing oxygen	C08F 34/00 , C08F 34/02
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, e.g. having condensed rings	C08F 232/00 , C08F 232/08
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, e.g. in a ring containing oxygen	C08F 234/00 , C08F 234/02
Use of polymers of unsaturated cyclic compounds having no unsaturated aliphatic groups in a side-chain, e.g. coumarone-indene resins or derivatives thereof, as moulding material	B29K 2045/00
Use of polymers of unsaturated cyclic compounds having no unsaturated aliphatic groups in a side-chain, e.g. coumarone-indene resins or derivatives thereof, as reinforcement	B29K 2245/00
Use of polymers of unsaturated cyclic compounds having no unsaturated aliphatic groups in a side-chain, e.g. coumarone-indene resins or derivatives thereof, as filler	B29K 2445/00

Use of polymers of unsaturated cyclic compounds having no unsaturated aliphatic groups in a side-chain, e.g. coumarone-indene resins or derivatives thereof, for preformed parts, e.g. inserts	B29K 2645/00
Use of polymers of unsaturated cyclic compounds having no unsaturated aliphatic groups in a side-chain, e.g. coumarone-indene resins or derivatives thereof, as mould material	B29K 2845/00
Compositions of homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system, e.g. compositions of coumarone-indene polymers; compositions of derivatives of such polymers	C08L 45/00 , C08L 45/02
Compositions of homopolymers or copolymers in minority of compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system, e.g. compositions of coumarone-indene polymers; Compositions of derivatives of such polymers	C08L 45/00 , C08L 45/02 , C08L 2666/04 , C08L 2666/10
Coating compositions based on homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system, e.g. coating compositions based on coumarone-indene polymers; coating compositions based on derivatives of such polymers	C09D 145/00 , C09D 145/02
Adhesives based on homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in a side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system, e.g. adhesives based on coumarone-indene polymers; adhesives based on derivatives of such polymers	C09J 145/00 , C09J 145/02
Developers in electrography, electrophotography and magnetography wherein the binders for toner particles comprise polymers of unsaturated cyclic compounds having no unsaturated aliphatic groups in a side-chain, e.g. coumarone-indene resins	G03G 9/08735

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

Coumarone	Benzofuran, CAS RN: 271-89-6
Indene	CAS RN: 95-13-6
Coumarone-indene copolymer	CAS RN: 35343-70-5

C08F 246/00

Copolymers in which the nature of only the monomers in minority is defined

Definition statement

This place covers:

Copolymers in which the nature of the comonomer(s) providing the repeating unit(s) present in majority is either not specified or not particularly restricted, whereas the nature of the comonomer(s) providing the repeating unit(s) present in minority (on the basis of the molar percentage or weight percentage values as the case may be) is clearly specified.

References

Informative references

Attention is drawn to the following places, which may be of interest for search:

Compositions of unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds, e.g. copolymers in which only the monomer in minority is defined	C08L 57/00 , C08L 57/04
Compositions of unspecified polymers in minority obtained by reactions only involving carbon-to-carbon unsaturated bonds, e.g. copolymers in which only the monomer in minority is defined	C08L 57/00 , C08L 57/04 , C08L 2666/04
Coating compositions based on unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds, e.g. copolymers in which only the monomer in minority is defined	C09D 157/00 , C09D 157/04
Adhesives based on unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds, e.g. copolymers in which only the monomer in minority is defined	C09J 157/00 , C09J 157/04

Special rules of classification

- When a copolymer disclosed requires solely, as a mandatory proviso, the presence of a minor amount of one or more comonomer repeating unit(s), the symbol [C08F 246/00](#) is given.
- One or more appropriate Indexing Code(s) reflecting the nature of this/these minority comonomer repeating unit(s) for each exemplified copolymer should be given.
- One or more appropriate [C08F](#) symbol(s) should also be given on the basis of the comonomer repeating unit(s) which is/are present in majority in each exemplified copolymer.
- The Indexing Code [C08F 2800/10](#) should be given in order to indicate that the proportions of the comonomers in a copolymer are expressed as molar percentages.
- The Indexing Code [C08F 2800/20](#) should be given in order to indicate that the proportions of the comonomers in a copolymer are expressed as weight or mass percentages.

C08F 251/00

Macromolecular compounds obtained by polymerising monomers on to polysaccharides or derivatives thereof

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polysaccharide.

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Polysaccharides and their derivatives are classified in [C08B](#).

Chemical modifications of [C08F](#)-type polymers are classified in [C08F 8/00](#). When no chain extension occurs but only one monomer is attached to the backbone, the reaction is not considered to be a grafting but a chemical modification and is classified in [C08F 8/00](#). This is for example the case of reaction of maleic anhydride through "ene" reaction which is classified in [C08F 8/46](#).

Chemical modification of rubber with an unsaturated monomer (if no grafting takes place) is classified in [C08C 19/28](#).

Grafting through reaction of two polymers via condensation reaction is classified in [C08G](#), in particular [C08G 81/00](#).

No specific group exists for the grafting on films which is therefore considered to be a graft polymer of groups [C08F 251/00-C08F 292/00](#).

Grafting on fibres is classified in [D06M 14/00-D06M 14/36](#).

Grafting on a shaped article is classified in [C08J 7/16](#).

When the process used is a living radical polymerization process, Indexing Codes [C08F 2438/00-C08F 2438/03](#) are additionally given.

Photosensitive compositions for lithography are classified in [G03F](#):

[G03F 7/004](#): photosensitive material.

[G03F 7/032-G03F 7/037](#) photosensitive material comprising a monomer and a binder.

Coating or adhesive compositions comprising an unsaturated monomer and a polymer (polymerization in situ) are classified in ([C09D 4/06](#), [C08F 251/00](#))- ([C09D 4/06](#), [C08F 292/00](#)) or ([C09J 4/06](#), [C08F 251/00](#))-([C09J 4/06](#), [C08F 292/00](#)).

For example, a paint based on MMA and PVC is classified in ([C09D 4/06](#), [C08F 259/04](#)).

However, this does not apply if the polymer is an unsaturated polymer of [C09D 159/00](#) - [C09D 187/00](#) (unsaturated [C08G](#) polymer).

References

Limiting references

This place does not cover:

Compositions of graft polymers obtained by polymerization of a monomer in the presence of a polysaccharide	C08L 51/02
Coating composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polysaccharide	C09D 151/02
Adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polysaccharide	C09J 151/02

Special rules of classification

In [C08F 251/00](#) - [C08F 292/00](#), the grafted monomer may be indicated using the subdivision of [C08F 210/00](#) - [C08F 238/04](#) in the form of Combination set, e.g. cellulose grafted with styrene will be classified in ([C08F 251/02](#), [C08F 212/08](#)).

This specification of the grafted monomer is used when the monomer is specified in the claims or in the examples. If several monomers are grafted, the monomer in majority is indicated.

If the monomer is a crosslinker, e.g. diacrylate, it is important to indicate it in a Combination set.

If the polymer to be grafted is a copolymer, the symbol corresponding to the backbone component in majority is given.

In cases of co-grafting, i.e. a monomer is reacted in the presence of two backbone polymers, both symbols related to the backbone are given. For example co-grafting of a monomer onto a polyethylene and a polysiloxane will be classified in [C08F 255/02](#) and [C08F 283/12](#).

For core shell polymers, the order of addition is considered for classification. If a seed polymer is used, it is normally ignored for classification.

Example: A core shell polymer obtained by:

- 1) polymerization of styrene
- 2) polymerization of acrylic acid in the presence of the polymer obtained in step 1)

is classified in ([C08F 257/02](#), [C08F 220/06](#)).

C08F 253/00

Macromolecular compounds obtained by polymerising monomers on to natural rubbers or derivatives thereof

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a natural rubber or derivatives thereof.

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymers obtained by polymerization of a monomer in the presence of rubber	C08L 51/04
Coating composition comprising a graft polymer obtained by polymerization of a monomer in the presence of rubber	C09D 151/04
Adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of rubber	C09J 151/04

Special rules of classification

Please see Rules under [C08F 251/00](#).

C08F 255/00

Macromolecular compounds obtained by polymerising monomers on to polymers of hydrocarbons as defined in group [C08F 10/00](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond as defined in group [C08F 10/00](#), e.g. polyethylene or polypropylene.

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see Relationship under [C08F 251/00](#). Emphasis added to the following:

Chemical modifications of [C08F](#)-type polymers are classified in [C08F 8/00](#). When no chain extension occurs but only one monomer is attached to the backbone, the reaction is not considered to be a grafting but a chemical modification and is classified in [C08F 8/00](#). This is for example the case of reaction of maleic anhydride through "ene" reaction which is classified in [C08F 8/46](#).

References

Limiting references

This place does not cover:

Multistage polymerisation process characterised by a change in reactor conditions without deactivating the intermediate polymer	C08F 2/001
Processes for the multistage polymerisation of olefin leading to heterophasic polymers	(C08F 10/00 , C08F 2/001), (C08F 210/00 , C08F 2/001)
The resulting product of processes for the multistage polymerisation of olefin leading to heterophasic polymers	C08L 23/04 - C08L 23/24
Compositions of graft polymers obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Compositions of graft polymers obtained by polymerization of a monomer in the presence of a polymer of aliphatic hydrocarbon containing only one carbon to carbon double bonds	C08L 51/06
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer of aliphatic hydrocarbon containing only one carbon to carbon double bonds	C09D 151/06 , C09J 151/06

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 257/00

Macromolecular compounds obtained by polymerising monomers on to polymers of aromatic monomers as defined in group [C08F 12/00](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and at least being terminated by an aromatic carbocyclic ring as defined in group [C08F 12/00](#), e.g. polystyrene.

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Polymers obtained by polymerising monomers onto block polymers	C08F 287/00
Compositions of graft polymers obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 259/00

Macromolecular compounds obtained by polymerising monomers on to polymers of halogen containing monomers as defined in group [C08F 14/00](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer 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 as defined in [C08F 14/00](#), e.g. poly(vinyl chloride) or poly(vinylidene fluoride).

In this group it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymers obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 261/00

Macromolecular compounds obtained by polymerising monomers on to polymers of oxygen-containing monomers as defined in group [C08F 16/00](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer 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 as defined in [C08F 16/00](#), e.g. poly(vinyl alcohol).

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 263/00

Macromolecular compounds obtained by polymerising monomers on to polymers of esters of unsaturated alcohols with saturated acids as defined in group [C08F 18/00](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer 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 carbonic acid or of a haloformic acid as defined in group [C08F 18/00](#) (e.g poly(vinyl acetate)).

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 265/00

Macromolecular compounds obtained by polymerising monomers on to polymers of unsaturated monocarboxylic acids or derivatives thereof as defined in group [C08F 20/00](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer 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 carboxylic radical or a salt, anhydride, ester, amide, imide or nitrile thereof as defined in group [C08F 20/00](#) (e.g poly(methyl acrylate), poly(methyl acrylic acid), polyacrylonitrile, polyacrylamide).

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted

or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003

Special rules of classification

Please see the Rules under [C08F 251/00](#).

In [C08F 265/06](#), the method of polymerisation may be indicated in the form of Combination sets using the subdivision of [C08F 2/02](#) (bulk), [C08F 2/16](#) (aqueous medium), [C08F 2/18](#) (aqueous suspension) or [C08F 2/22](#) (aqueous emulsion).

In addition to the method of polymerisation, the grafted monomer can also be specified for the group [C08F 265/06](#) in the form of Combination sets, e.g. ([C08F 265/06](#), [C08F 220/18](#)) is given to classify the polymerization of methyl methacrylate (as grafted monomer) on to a polymer of acrylate/methacrylate.

C08F 267/00

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

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer 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 only one carboxyl radical and containing at least one other carboxyl radical in the molecule; salts, anhydrides, esters, amides, imides or nitriles thereof as defined in group [C08F 22/00](#) (e.g. poly(maleic anhydride), poly(vinylidene cyanide)).

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 269/00

Macromolecular compounds obtained by polymerising monomers on to polymers of heterocyclic oxygen-containing monomers as defined in group [C08F 24/00](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer 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 as defined in group [C08F 24/00](#).

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 271/00

Macromolecular compounds obtained by polymerising monomers on to polymers of nitrogen-containing monomers as defined in group [C08F 26/00](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer of nitrogen-containing monomers as defined in group [C08F 26/00](#), e.g. diallylamine, N-vinyl-pyrrolidine or N-vinyl-pyrrolidone.

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 273/00

Macromolecular compounds obtained by polymerising monomers on to polymers of sulfur-containing monomers as defined in group [C08F 28/00](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer 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 as defined in group [C08F 28/00](#).

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 275/00

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](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer 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 as defined in group [C08F 30/00](#).

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 277/00

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](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer 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 as defined in group [C08F 32/00](#) or in a heterocyclic ring as defined in group [C08F 34/00](#).

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 279/00

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](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer of monomers having two or more carbon-to-carbon double bonds as defined in group [C08F 36/00](#), e.g. polybutadiene, polyisoprene or styrene-butadiene polymer.

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Compositions of ABS polymer	C08L 55/02
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003
Coating or adhesive composition comprising an ABS polymer	C09D 155/02 . C09J 155/02

Special rules of classification

Please see the Rules under [C08F 251/00](#).

In **C09F279/02** and [C08F 279/04](#), the method of polymerisation may be indicated using the subdivision of [C08F 2/02](#) (bulk), [C08F 2/16](#) (aqueous medium), [C08F 2/18](#) (aqueous suspension) or [C08F 2/22](#) (aqueous emulsion).

C08F 281/00

Macromolecular compounds obtained by polymerising monomers on to polymers of monomers having carbon-to-carbon triple bonds as defined in group [C08F 38/00](#)

Definition statement

This place covers:

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/003
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/003 , C09J 151/003

Special rules of classification

Please see the Rules under [C08F 251/00](#).

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](#))}

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer from [C08G](#), e.g. polyesters, polycarbonates, polyethers, polyamides, polysiloxanes, polyepoxides

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Graft polymers obtained by polymerization of a monomer onto a C08G -type polymer modified by introduction of aliphatic unsaturated end or side groups.	C08F 290/06 , C08F 290/14
Compositions of graft polymer obtained by polymerization of a monomer in the presence of a C08G -type polymer	C08L 51/08
Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polysiloxane	C08L 51/085
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polymer of C08G	C09D 151/08 , C09J 151/08
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polysiloxane	C09D 151/085 , C09J 151/085

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 285/00

Macromolecular compounds obtained by polymerising monomers on to preformed graft polymers {([C08F 283/00](#) takes precedence)}

Definition statement

This place covers:

This group covers core-shell polymers or multistage polymers prepared in at least three polymerisation stages.

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

Special rules of classification

In this group, the monomers polymerised in the last polymerisation step may be indicated using the subdivision of [C08F 210/00](#) - [C08F 238/04](#) in the form of Combination set.

This specification of the grafted monomer is used when the monomer is specified in the claim or to classify the examples. If several monomers are grafted, the monomer in majority is indicated.

C08F 287/00

Macromolecular compounds obtained by polymerising monomers on to block polymers {([C08F 283/00](#) takes precedence)}

Definition statement

This place covers:

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a block polymer containing at least one sequence of polymer obtained by reactions involving only carbon to carbon double bonds	C08L 51/006
Compositions of graft polymer obtained by polymerization of a monomer in the presence of a C08G -type (block) polymer	C08L 51/08
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a block polymer containing at least one sequence of polymer obtained by reactions involving only carbon to carbon double bonds	C09D 151/006 , C09J 151/006

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 289/00

Macromolecular compounds obtained by polymerising monomers on to macromolecular compounds not provided for in groups [C08F 251/00](#) - [C08F 287/00](#)

Definition statement

This place covers:

Reaction of an unsaturated monomer in the presence of a polymer not provided for in groups [C08F 251/00](#) - [C08F 287/00](#), e.g. protein.

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymers	C08L 51/00
Coating or adhesive composition comprising a graft polymer	C09D 151/00 , C09J 151/00

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 290/00

Macromolecular compounds obtained by polymerising monomers on to polymers modified by introduction of aliphatic unsaturated end or side groups

Definition statement

This place covers:

This group covers comb polymers obtained by reaction of a monomer with a macromonomer having an end unsaturation. The monomer forms the backbone and the macromonomer forms the teeth of the comb polymer.

Polymers obtained by reaction of a monomer and a macromonomer having side groups or several end groups are also classified in this group.

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymer obtained by polymerization of a monomer in the presence of a C08G -type polymer	C08L 51/08
Compositions of graft polymer obtained by polymerization of a monomer in the presence of a polysiloxane	C08L 51/085
Compositions of homopolymers or copolymers obtained by polymerisation of polymers terminated by a C=C bound	C08L 55/005
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a C08G -type polymer	C09D 151/08 , C09J 151/08
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer in the presence of a polysiloxane	C09D 151/085 , C09J 151/085
Coating or adhesive compositions comprising homopolymers or copolymers obtained by polymerisation of polymers terminated by a C=C bound	C09D 155/005 , C09J 155/005

Informative references

Attention is drawn to the following places, which may be of interest for search:

Copolymers of monocarboxylic acid esters of polyhydric alcohols or phenols	C08F 220/20
Copolymers of monocarboxylic acids esters containing ether chain in the alcohol moiety	C08F 2220/285 - C08F 2220/288
Graft polymers obtained by polymerization of a monomer onto a polymer of C08G	C08F 283/00
Coating or adhesive obtained from the polymerization (in situ) of a monomer on a polymer, except unsaturated polymer of C08G	(C09D 4/06 , C08F 251/00) - (C09D 4/06 , C08F 292/00), (C09J 4/06 , C08F 251/00) - (C09J 4/06 , C08F 292/00)
Coating or adhesive obtained by the polymerisation (in situ) of a monomer onto an unsaturated polymer of C08G	C09D 159/00 - C09D 187/00

Special rules of classification

Please see the Rules under [C08F 251/00](#).

Coating or adhesive compositions comprising an unsaturated monomer and a polymer are classified in ([C09D 4/06](#), [C08F 251/00](#))- ([C09D 4/06](#), [C08F 292/00](#)) or ([C09J 4/06](#), [C08F 251/00](#))-([C09J 4/06](#), [C08F 292/00](#)).

For example, a paint based on MMA and PVC is classified in ([C09D 4/06](#), [C08F 259/04](#)).

However, this does not apply if the polymer is an unsaturated polymer of [C09D 159/00](#) - [C09D 187/00](#) (unsaturated polymer of [C08G](#)). In these cases, the symbol [C08F 290/06](#) or [C08F 290/14](#) is added.

C08F 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](#)

Definition statement

This place covers:

This group is used when the backbone polymer is not specified or if it can be classified in more than one group of [C08F 251/00](#) - [C08F 289/00](#).

In this section it is considered that a monomer is "grafted onto" a backbone polymer when it is polymerized "in the presence" of an existing polymer. The monomer may be grafted, partially grafted or even not actually grafted onto the backbone polymer. All these possibilities are classified in this subclass/group.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymers	C08L 51/00
Coating or adhesive composition comprising a graft polymer	C09D 151/00 , C09J 151/00

Special rules of classification

Please see the Rules under [C08F 251/00](#).

This group is used when the backbone polymer is not specified or if it can be classified in more than one group of [C08F 251/00](#) - [C08F 289/00](#).

It is used if the backbone polymer is unspecific in the claims but additional more specific classification symbols corresponding to the examples of the document are also added.

In [C08F 291/00](#), the method of polymerisation may be indicated using the subdivision of [C08F 2/02](#) (bulk), [C08F 2/16](#) (aqueous medium), [C08F 2/18](#) (aqueous suspension) or [C08F 2/22](#) (aqueous emulsion), e.g. ([C08F 291/00](#), [C08F 2/16](#)).

C08F 292/00

Macromolecular compounds obtained by polymerising monomers on to inorganic materials

Definition statement

This place covers:

In this section it is considered that a monomer is "grafted onto" an inorganic material when it is polymerized "in the presence" thereof. The monomer may be grafted or partially grafted thereon. Both possibilities are classified in this subclass/group. For the cases in which the monomer is not grafted at all onto the inorganic material, the attention is drawn to the informative references hereinbelow. Examples of inorganic materials are silica, metal oxides, glass etc.

Relationships with other classification places

Please see the Relationship under [C08F 251/00](#).

References

Limiting references

This place does not cover:

Compositions of graft polymers obtained by polymerization of a monomer onto an inorganic material	C08L 51/10
Coating or adhesive composition comprising a graft polymer obtained by polymerization of a monomer onto an inorganic material	C09D 151/10 , C09J 151/10

Informative references

Attention is drawn to the following places, which may be of interest for search:

Polymerization in the presence of compounding ingredients	C08F 2/44
Treatment of silica with macro-molecular organic compound	C09C 1/3072
Treatment with macro-molecular organic compound of inorganic materials, other than fibrous fillers, to enhance their pigmenting or filling properties	C09C 3/10

Special rules of classification

Please see the Rules under [C08F 251/00](#).

C08F 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](#))

Definition statement

This place covers:

Block copolymers produced by radical polymerization.

Block copolymers produced by living radical polymerization (LRP) are classified in [C08F 293/005](#). Examples of LRP are ATRP (Atom Transfer Radical Polymerisation), RAFT (Reversible Addition-Fragmentation chain Transfer, using e.g. di- or tri-thiocarbamate or xanthate) or nitroxy mediated LRP (using e.g. TEMPO).

References

Limiting references

This place does not cover:

Polymerisation of a monomer on to polymers modified by introduction of unsaturated end groups.	C08F 290/02
Cosmetic or toilet preparation comprising block polymers	A61K 8/91
Block- or graft polymers containing polysiloxane sequences	C08G 77/42

Macromolecular compounds obtained by interreacting polymers in the absence of monomers, e.g. block polymers (reaction of two polymers via condensation reaction)	C08G 81/00 , specific C08G block groups
Compositions of block copolymers containing at least one sequence of a polymer obtained by reactions only involving carbon-to-carbon unsaturated bonds	C08L 53/00
Coating or adhesive compositions of block copolymers containing at least one sequence of a polymer obtained by reactions only involving carbon-to-carbon unsaturated bonds	C09D 153/00 , C09J 153/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Living radical polymerization	C08F 2438/00 - C08F 2438/03
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C08F 295/00

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

References

Limiting references

This place does not cover:

Compositions of block copolymers containing at least one sequence of a polymer obtained by reactions only involving carbon-to-carbon unsaturated bonds	C08L 53/00
Coating or adhesive compositions of block copolymers containing at least one sequence of a polymer obtained by reactions only involving carbon-to-carbon unsaturated bonds;	C09D 153/00 , C09J 153/00

C08F 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

Definition statement

This place covers:

Block polymers obtained by cationic polymerisation, e.g. isobutylene classified in [C08F 297/00](#).

Block polymers obtained by anionic polymerisation classified in [C08F 297/02](#) or subgroups.

Block polymers obtained by a catalyst of the coordination type, e.g. metallocene or Ziegler-Natta classified in [C08F 297/06](#) or subgroups.

Star polymers if star-block polymers of the type (A-B)_n-X, with A-B being a block polymer.

Relationships with other classification places

Star homopolymers or copolymers in which the arms are a homo or a copolymer, i.e the arms are not block arms are classified in the respective homo-or copolymer groups.

Multistage polymerisation processes characterised by a change in reactor conditions without deactivating the intermediate polymer are classified in [C08F 2/001](#). In particular, processes for the multistage polymerisation of olefin leading to heterophasic polymers are classified in ([C08F 10/00](#), [C08F 2/001](#)). The resulting product is considered to be a composition of [C08L 23/00](#).

References

Limiting references

This place does not cover:

Compositions of block copolymers containing at least one sequence of a polymer obtained by reactions only involving carbon-to-carbon unsaturated bonds	C08L 53/00
Compositions of block polymers of vinyl aromatic monomer and conjugated diene polymers	C08L 53/02
Coating or adhesive compositions of block copolymers containing at least one sequence of a polymer obtained by reactions only involving carbon-to-carbon unsaturated bonds;	C09D 153/00 , C09J 153/00
Coating or adhesive compositions of block copolymers of vinyl aromatic monomer and conjugated diene polymers	C09D 153/02 , C09J 153/02

Informative references

Attention is drawn to the following places, which may be of interest for search:

Multistage polymerisation processes characterised by a change in reactor conditions without deactivating the intermediate polymer	C08F 2/001
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Special rules of classification

In [C08F 297/00](#) are classified documents where two different monomer systems are polymerized successively.

C08F 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](#))

Definition statement

This place covers:

Reaction of polymers having one or more unsaturations.

Crosslinked polymers are the result of an addition reaction occurring between polymer chains containing unsaturated aliphatic radicals (being placed at the middle or end of the backbone or laterally) in the absence of monomeric compounds.

References

Application-oriented references

Examples of places where the subject matter of this place is covered when specially adapted, used for a particular purpose, or incorporated in a larger system:

Coating or adhesive compositions obtained from the reaction of polymers having unsaturations	C09D , C09J
Photosensitive material for lithography	G03F 7/004

C08F 301/00

Macromolecular compounds not provided for in groups

[C08F 10/00](#) - [C08F 299/00](#)

Special rules of classification

At present, no polymer belonging to [C08F](#) shall be classified in this group as the subgroups starting from [C08F 10/00](#) - [C08F 299/08](#) encompass all the possible addition polymers.