



Europäisches
Patentamt
European
Patent Office
Office européen
des brevets

Combination Sets

Combination sets comprising symbols selected among the groups
C08F2, C08F4, C08F2500, C08F6 or C08F8



Outline

- Scope
- information sources
- Rules and principles
- Processes of polymerisation (C08F2)
- Polymerisation catalysts (C08F4)
- Characteristics or properties of obtained polymers; Use thereof (C08F2500)
- Post-polymerisation treatments (C08F6)
- Chemical modification by after-treatment (C08F8)

Scope: subclass C08F

Symbol	Classification and description
C	CHEMISTRY; METALLURGY
	Chemistry
C08	ORGANIC MACROMOLECULAR COMPOUNDS; THEIR PREPARATION OR CHEMICAL WORKING-UP; COMPOSITIONS BASED THEREON (manufacture or treatment of artificial threads, fibres, bristles or ribbons D01)
C08B	POLYSACCHARIDES; DERIVATIVES THEREOF (polysaccharides containing less than six saccharide radicals attached to each other by glycosidic linkages C07H ; fermentation or enzyme-using processes C12P 19/00 ; sugar industry C13 ; production of cellulose D21)
C08C	TREATMENT OR CHEMICAL MODIFICATION OF RUBBERS
C08F	MACROMOLECULAR COMPOUNDS OBTAINED BY REACTIONS ONLY INVOLVING CARBON-TO-CARBON UNSATURATED BONDS
C08G	MACROMOLECULAR COMPOUNDS OBTAINED OTHERWISE THAN BY REACTIONS ONLY INVOLVING UNSATURATED CARBON-TO-CARBON BONDS
C08H	DERIVATIVES OF NATURAL MACROMOLECULAR COMPOUNDS (polysaccharides C08B ; natural rubber C08C ; natural resins or their derivatives C09F ; bituminous materials C10)
C08J	WORKING-UP; GENERAL PROCESSES OF COMPOUNDING; AFTER-TREATMENT NOT COVERED BY SUBCLASSES C08B, C08C, C08F, C08G (mechanical aspects B29 ; layered products, manufacture thereof B32B ; treatment of macromolecular material specially adapted to enhance its filling properties in mortars, concrete or artificial stone C04B 16/04 , C04B 18/20 , C04B 20/00 ; treatment of textiles D06)
C08K	USE OF INORGANIC OR NON-MACROMOLECULAR ORGANIC SUBSTANCES AS COMPOUNDING INGREDIENTS (pesticides, herbicides A01N ; pharmaceuticals, cosmetics A61K ; explosives C06B ; paints, inks, varnishes, dyes, polishes, adhesives C09 ; lubricants C10M ; detergents C11D ; artificial filaments or fibres D01F ; textile treating compositions D06)
C08L	COMPOSITIONS OF MACROMOLECULAR COMPOUNDS (pesticides, herbicides A01N ; pharmaceuticals, cosmetics A61K ; explosives C06B ; compositions based on polymerisable monomers C08F , C08G ; paints, inks, varnishes, dyes, polishes, adhesives C09 ; lubricants C10M ; detergents C11D ; artificial filaments or fibres D01F ; textile treating compositions D06)

Scope: C08F2, C08F4, C08F2500, C08F6, C08F8

C08F 2/00 Processes of polymerisation

C08F 4/00 Polymerisation catalysts (catalysts in general B01J)

C08F 2500/00 Characteristics or properties of obtained polymers; Use thereof

C08F 6/00 Post-polymerisation treatments (C08F 8/00 takes precedence; of conjugated diene rubbers C08C)

C08F 8/00 Chemical modification by after-treatment (graft polymers, block polymers, cross-linking with unsaturated monomers or with polymers C08F 251/00 to C08F 299/00 ; of conjugated diene rubbers C08C; cross-linking in general C08J)

Scope

□ relates to Combination sets linking:

- ❖ a **polymer** (base symbol: C08F10 and some specific polymer groups further down in the scheme) and a **polymerisation process** (second symbol: C08F2)
- ❖ a **polymer** (base symbol: C08F10 and some specific polymer groups further down in the scheme) and a **polymerisation catalyst** (second symbol: C08F4)
- ❖ a **homopolymer** (base symbol: C08F110/02-C08F110/14) or a **copolymer** (base symbol: C08F210/02-C08F210/18) and **characteristics, properties or a use thereof** (last symbol(s): C08F2500)

Scope

- ❖ The **post-polymerisation treatment** (base symbol: **C08F6**) of a **polymer** (second symbol: **C08L23/00 to C08L57/12**)
- ❖ The **chemical modification by after-treatment** (base symbol: **C08F8**) of a **polymer** (last symbol in the Combination set: **C08F10** and most (but not all of) those further down in the C08F scheme)

Rules and principles

❑ Last place rule (LPR):

➤ in the Combination sets of the polymer field, the so called “last place rule” (or “last appropriate place”) has usually to be applied for each group symbol linked within a Combination set,

- unless it has been otherwise provided for a specific group symbol used in said Combination set, or an exception applies for a particular type of Combination set in view of one of the symbols (e.g. the base symbol) which supersedes the LPR requirement.

❑ A **claimed invention** has to be classified according to the claims and/or according to the examples, and/or according to what may need to be retrieved later

Rules and principles

- ❑ Since C08F2, C08F4, C08F2500, C08F6 and C08F8 all belong to the subclass C08F, **only** processes, catalysts, and other relevant properties or after-treatments (within C08F2500, C08F6 and C08F8) are classified and/or indexed which are relevant for **C08F** polymers, i.e. “Macromolecular Compounds Obtained By Reactions Only Involving Carbon-To-Carbon Bonds”.
- ❑ Moreover, some C08F polymers (e.g. polymers of dienes) should not be linked with e.g. symbols relating to after-treatments (C08F6 or C08F8), since other unlinked symbols have already been foreseen for this purpose (e.g. C08C) and therefore take precedence over the assignment of a Combination set in C08F6 and/or C08F8

Processes of polymerisation (C08F2)

Scope of the Combination sets:

Guidance & comments:

Examples for polyolefins:

Recapitulative table for polyolefins:

Processes of polymerisation (C08F2): Scope of the Combination sets

- ❑ **C08F2** is **never used as a base symbol** within a Combination set, but **only in second position therein** and the Combination set is (**INV.**) information
 - C08F2 may also be used as an single symbol or single symbol (INV.) classification symbol.
- ❑ Processes defined in the subgroups of **C08F2** may be linked to polymers selected from the following main groups as base symbols :
 - ❖ **C08F10, C08F110, C08F210**
 - ❖ **C08F12, C08F112, C08F212**
 - ❖ **C08F14,**
 - ❖ **C08F20,**
 - ❖ **C08F36, C08F136, C08F236**
 - ❖ **C08F265, C08F279, C08F283, C08F291**
- ❑ The precise scope of the base symbols and of the “linkable” subgroups within **C08F2** are defined in the respective NOTES of the Scheme and in the Definitions

C08F2: full scheme (part I)

C08F 2/00	Processes of polymerisation
C08F 2/001	• {Multistage polymerisation processes characterised by a change in reactor conditions without deactivating the intermediate polymer} ({ C08F 295/00 , C08F 297/00 take precedence })
C08F 2/002	• {Scale prevention in a polymerisation reactor or its auxiliary parts}
C08F 2/004	• {by a prior coating on the reactor walls}
C08F 2/005	• {by addition of a scale inhibitor to the polymerisation medium}
C08F 2/007	• {Scale prevention in the auxiliary parts}
C08F 2/008	• {cleaning reaction vessels using chemicals} ({ mechanical methods B08B 9/08 })
C08F 2/01	• characterised by special features of the polymerisation apparatus used
C08F 2/02	• Polymerisation in bulk
C08F 2/04	• Polymerisation in solution (C08F 2/32 takes precedence)
C08F 2/06	• Organic solvent
C08F 2/08	• with the aid of dispersing agents for the polymer
C08F 2/10	• Aqueous solvent
C08F 2/12	• Polymerisation in non-solvents (C08F 2/32 takes precedence)
C08F 2/14	• Organic medium
C08F 2/16	• Aqueous medium
C08F 2/18	• Suspension polymerisation
C08F 2/20	• with the aid of macromolecular dispersing agents
C08F 2/22	• Emulsion polymerisation
C08F 2/24	• with the aid of emulsifying agents
C08F 2/26	• anionic
C08F 2/28	• cationic
C08F 2/30	• non-ionic

C08F2: full scheme (part II)

C08F 2/32	• Polymerisation in water-in-oil emulsions
C08F 2/34	• Polymerisation in gaseous state
C08F 2/36	• Polymerisation in solid state
C08F 2/38	• Polymerisation using regulators, e.g. chain terminating agents, {e.g. telomerisation}
C08F 2/40	• using retarding agents
C08F 2/42	• using short-stopping agents
C08F 2/44	• Polymerisation in the presence of compounding ingredients, e.g. plasticisers, dyestuffs, fillers
C08F 2/46	• Polymerisation initiated by wave energy or particle radiation
C08F 2/48	• by ultra-violet or visible light
C08F 2/50	• with sensitising agents
C08F 2/52	• by electric discharge, e.g. voltolisation
C08F 2/54	• by X-rays or electrons
C08F 2/56	• by ultrasonic vibrations
C08F 2/58	• Polymerisation initiated by direct application of electric current (electrolytic processes, e.g. electrophoresis <u>C25</u>)
C08F 2/60	• Polymerisation by the diene synthesis

C08F2: scope of the allowed Combination sets with C08F10 as base symbol

C08F 10/00	Homopolymers and copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond
	Notes
	i In groups <u>C08F10/00</u> to <u>C08F10/14</u> the method of polymerisation or the nature of the catalyst may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/58</u> or of <u>C08F4/00</u> to <u>C08F4/82</u> in the form of C-Sets. Example: (<u>C08F10/02</u> , <u>C08F4/651</u>)
C08F 10/02	• Ethene
C08F 10/04	• Monomers containing three or four carbon atoms
C08F 10/06	• Propene
C08F 10/08	• Butenes
C08F 10/10	• Isobutene
C08F 10/14	• Monomers containing five or more carbon atoms

C08F2: scope of the allowed Combination sets with C08F110 as base symbol

C08F 110/00	Homopolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond
	Notes
	i In groups <u>C08F110/00</u> to <u>C08F110/14</u> the method of polymerisation or the nature of the catalyst may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/58</u> or of <u>C08F4/00</u> to <u>C08F4/82</u> in the form of C-Sets. Example: (<u>C08F110/14</u> , <u>C08F4/6592</u>)
C08F 110/02	• Ethene
C08F 110/04	• monomers containing three or four carbon atoms
C08F 110/06	• Propene
C08F 110/08	• Butenes
C08F 110/10	• Isobutene
C08F 110/14	• Monomers containing five or more carbon atoms

C08F2: scope of the allowed Combination sets with C08F210 as base symbol

C08F 210/00	Copolymers of unsaturated aliphatic hydrocarbon having only one carbon-to-carbon double bond
	Notes
	i In <u>C08F210/00</u> to <u>C08F210/18</u> the method of polymerisation or the nature of the catalyst may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/58</u> or of <u>C08F4/00</u> to <u>C08F4/82</u> in the form of C-Sets. Example: (<u>C08F210/06</u> , <u>C08F4/04</u>)
C08F 210/02	• Ethene
C08F 210/04	• Monomers containing three or four carbon atoms
C08F 210/06	• Propene
C08F 210/08	• Butenes
C08F 210/10	• Isobutene
C08F 210/12	• with conjugated diolefins, e.g. butyl rubber
C08F 210/14	• Monomers containing five or more carbon atoms
C08F 210/16	• Copolymers of ethene with alfa-alkenes, e.g. EP rubbers
C08F 210/18	• with non-conjugated dienes, e.g. EPT rubbers

C08F2: scope of the allowed Combination sets with C08F12 as base symbol

Notes

- i** 1. Until March 2012, in groups C08F12/04 to C08F12/08 the method of polymerisation might be indicated using the subdivision of C08F2/02 to C08F2/06, C08F2/16 to C08F2/30, C08F2/34 or C08F2/38 to C08F2/46 in the form of C-sets; the nature of the catalyst might be indicated using the subdivision of C08F4/00 to C08F4/60, C08F4/62, C08F4/64 or C08F4/68 to C08F4/82 in the form of C-Sets. Example: (C08F12/08, C08F2/20) 2. From April 2012 on, in groups C08F12/00 to C08F12/36 the method of polymerisation may be indicated using the subdivision of C08F2/00 to C08F2/60 in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of C08F4/00 to C08F4/82 in the form of C-Sets. Example: (C08F12/08, C08F2/56)

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

C08F 12/02	Monomers containing only one unsaturated aliphatic radical
C08F 12/04	containing one ring
C08F 12/06	Hydrocarbons
C08F 12/08	Styrene
C08F 12/12	Monomers containing a branched unsaturated aliphatic radical or a ring substituted by an alkyl radical
C08F 12/14	substituted by hetero atoms or groups containing heteroatoms
C08F 12/16	Halogens
C08F 12/18	Chlorine
C08F 12/20	Fluorine
C08F 12/22	Oxygen
C08F 12/24	Phenols or alcohols
C08F 12/26	Nitrogen
C08F 12/28	Amines
C08F 12/30	Sulfur
C08F 12/32	containing two or more rings
C08F 12/34	Monomers containing two or more unsaturated aliphatic radicals
C08F 12/36	Divinylbenzene

C08F2: scope of the allowed Combination sets with C08F112 as base symbol

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
	Notes
	i From April 2012 on, in groups <u>C08F112/00</u> to <u>C08F112/36</u> the method of polymerisation may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/60</u> in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of <u>C08F4/00</u> to <u>C08F4/82</u> in the form of C-Sets. Example: (<u>C08F112/08</u> , <u>C08F4/70</u>)
C08F 112/02	• Monomers containing only one unsaturated aliphatic radical
C08F 112/04	• containing one ring
C08F 112/06	• Hydrocarbons
C08F 112/08	• Styrene
C08F 112/12	• Monomers containing a branched unsaturated aliphatic radical or a ring substituted by an alkyl radical
C08F 112/14	• substituted by hetero atoms or groups containing heteroatoms
C08F 112/32	• containing two or more rings
C08F 112/34	• Monomers containing two or more unsaturated aliphatic radicals
C08F 112/36	• Divinylbenzene

C08F2: scope of the allowed Combination sets with C08F212 as base symbol

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
	Notes
	f From April 2012 on, in groups <u>C08F212/00</u> to <u>C08F212/36</u> the method of polymerisation may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/60</u> in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of <u>C08F4/00</u> to <u>C08F4/82</u> in the form of C-Sets. Example: (<u>C08F212/08</u> , <u>C08F4/16</u>)
C08F 212/02	• Monomers containing only one unsaturated aliphatic radical
C08F 212/04	• containing one ring
C08F 212/06	• Hydrocarbons
C08F 212/08	• Styrene
C08F 212/10	• with nitriles
C08F 212/12	• Monomers containing a branched unsaturated aliphatic radical or a ring substituted by an alkyl radical
C08F 212/14	• substituted by heteroatoms or groups containing heteroatoms
C08F 212/145	• {the heteroatoms being part of ester groups derived from unsaturated acids}
C08F 212/32	• containing two or more rings
C08F 212/34	• Monomers containing two or more unsaturated aliphatic radicals
C08F 212/36	• Divinylbenzene

C08F2: scope of the allowed Combination sets with C08F14 as base symbol

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
C08F 14/02	• Monomers containing chlorine
C08F 14/04	• Monomers containing two carbon atoms
C08F 14/06	• Vinyl chloride
<p>Notes</p> <p>i In group <u>C08F14/06</u> the method of polymerisation may be indicated using the subdivision of <u>C08F2/02</u> to <u>C08F2/06</u> , <u>C08F2/16</u> to <u>C08F2/30</u> , <u>C08F2/34</u> or <u>C08F2/38</u> to <u>C08F2/46</u> in the form of C-Sets. Example: (<u>C08F14/06</u> , <u>C08F2/44</u>)</p>	
C08F 14/08	• Vinylidene chloride
C08F 14/12	• 1,2- Dichloroethene
C08F 14/14	• Monomers containing three or more carbon atoms
C08F 14/16	• Monomers containing bromine or iodine
C08F 14/18	• Monomers containing fluorine
<p>Warnings</p> <p>⚠ In group <u>C08F14/18</u> and subgroups, the method of polymerisation may be indicated using the subdivision of <u>C08F2/02</u> , <u>C08F2/04</u> , <u>C08F2/16</u> , <u>C08F2/38</u> , <u>C08F2/44</u> and <u>C08F2/46</u> in the form of C-Sets. Example: (<u>C08F14/22</u> , <u>C08F2/38</u>)</p>	
C08F 14/185	• { Monomers containing fluorine not covered by the groups <u>C08F 14/20</u> to <u>C08F 14/28</u> }
C08F 14/20	• Vinyl fluoride
C08F 14/22	• Vinylidene fluoride
C08F 14/24	• Trifluorochloroethene
C08F 14/26	• Tetrafluoroethene
C08F 14/28	• Hexafluoropropene

C08F2: problem in view of the scope of the allowed Combination sets with C08F14/18

❑ Case of C08F14/18 (and subgroups);

➤ Warning in the **scheme**:

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	D
C08F 14/18	• Monomers containing fluorine	!
Warnings		
◆ In group C08F14/18 and subgroups, the method of polymerisation may be indicated using the subdivision of C08F2/02 , C08F2/04 , C08F2/16 , C08F2/38 , C08F2/44 and C08F2/46 in the form of C-Sets. Example: (C08F14/22 , C08F2/38)		
C08F 14/185	•• { Monomers containing fluorine not covered by the groups C08F 14/20 to C08F 14/28 }	
C08F 14/20	•• Vinyl fluoride	
C08F 14/22	•• Vinylidene fluoride	
C08F 14/24	•• Trifluorochloroethene	
C08F 14/26	•• Tetrafluoroethene	
C08F 14/28	•• Hexafluoropropene	

➤ Special rules according to the **Definitions**

Special rules of classification within this group

In groups **C08F14/06** and **C08F14/18** the method of polymerisation may be indicated using the subdivision of **C08F2/02** to **C08F2/06**, **C08F2/16** to **C08F2/30**, **C08F2/34** or **C08F2/38** to **C08F2/46**, e.g. (**C08F14/18**, **C08F2/38**).

C08F2: problem in view of the scope of the allowed Combination sets with
C08F14/18

- On the basis of the non-negligible amount of documents with allocated Combination sets based on subgroups of C08F14/18, it appears that the interpretation based on the “Warnings” of the scheme is the correct one, and that the Definitions will be amended in order to remove this discrepancy with the Scheme

C08F2: scope of the allowed Combination sets with C08F20/12-C08F20/14 as base symbol

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
C08F 20/02	Monocarboxylic acids having less than ten carbon atoms, Derivatives thereof
C08F 20/10	Esters
	<p>Notes</p> <p>i In groups C08F20/12 to C08F20/14 the method of polymerisation may be indicated using the subdivision of C08F2/02 to C08F2/06, C08F2/16 to C08F2/30, C08F2/34 or C08F2/38 to C08F2/46 in the form of C-Sets. Example: (C08F20/12, C08F2/26)</p>
C08F 20/12	• of monohydric alcohols or phenols
C08F 20/14	• Methyl esters
C08F 20/16	• of phenols or of alcohols containing two or more carbon atoms
C08F 20/18	• with acrylic or methacrylic acids
C08F 20/20	• of polyhydric alcohols or phenols
C08F 20/22	• Esters containing halogen
C08F 20/24	• containing perhaloalkyl radicals
C08F 20/26	• Esters containing oxygen in addition to the carboxy oxygen
C08F 20/28	• containing no aromatic rings in the alcohol moiety
C08F 20/30	• containing aromatic rings in the alcohol moiety
C08F 20/32	• containing epoxy radicals
C08F 20/34	• Esters containing nitrogen
C08F 20/36	• containing oxygen in addition to the carboxy oxygen
C08F 20/38	• Esters containing sulfur
C08F 20/40	• Esters of unsaturated alcohols

C08F2: scope of the allowed Combination sets with C08F20/44 as base symbol

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
C08F 20/02	• Monocarboxylic acids having less than ten carbon atoms, Derivatives thereof
C08F 20/42	• Nitriles
C08F 20/44	• Acrylonitrile

Notes

i In group **C08F20/44** the method of polymerisation may be indicated using the subdivision of **C08F2/02** to **C08F2/06** , **C08F2/16** to **C08F2/30** , **C08F2/34** or **C08F2/38** to **C08F2/46** in the form of C-Sets. Example: (**C08F20/44** , **C08F2/46**)

C08F2: scope of the allowed Combination sets with C08F36 as base symbol

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 (<u>C08F 32/00</u> takes precedence)
	Notes
	f In <u>C08F36/00</u> to <u>C08F36/22</u> the method of polymerisation may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/58</u> in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of 4/00 to 4/60, 4/62, 4/64, 4/642, 4/642B, 4/643 or 4/68 to 4/82 in the form of C-Sets. Example: (<u>C08F36/04</u> , <u>C08F4/642</u>)
C08F 36/02	• the radical having only two carbon-to-carbon double bonds
C08F 36/04	• conjugated
C08F 36/045	• {conjugated hydrocarbons other than butadiene or isoprene}
C08F 36/06	• Butadiene
C08F 36/08	• Isoprene
C08F 36/14	• containing elements other than carbon and hydrogen
C08F 36/16	• containing halogen
C08F 36/18	• containing chlorine
C08F 36/20	• unconjugated
C08F 36/22	• the radical having three or more carbon-to-carbon double bonds

C08F2: scope of the allowed Combination sets with C08F136 as base symbol

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 (<u>C08F 132/00</u> takes precedence)
	Notes
	i In <u>C08F136/00</u> to <u>C08F136/22</u> the method of polymerisation may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/58</u> in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of <u>C08F4/00</u> to <u>C08F4/60</u> , <u>C08F4/62</u> , <u>C08F4/64</u> , <u>C08F4/642</u> , <u>C08F4/642 B</u> , <u>C08F4/643</u> or <u>C08F4/68</u> to <u>C08F4/82</u> in the form of C-Sets. Example: (<u>C08F136/18</u> , <u>C08F2/26</u>)
C08F 136/02	• the radical having only two carbon-to-carbon double bonds
C08F 136/04	• conjugated
C08F 136/045	• {conjugated hydrocarbons other than butadiene or isoprene}
C08F 136/06	• Butadiene
C08F 136/08	• Isoprene
C08F 136/14	• containing elements other than carbon and hydrogen
C08F 136/16	• containing halogen
C08F 136/18	• containing chlorine
C08F 136/20	• unconjugated
C08F 136/22	• the radical having three or more carbon-to-carbon double bonds

C08F2: scope of the allowed Combination sets with C08F236 as base symbol

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 (<u>C08F 232/00</u> takes precedence)
	Notes
	i In <u>C08F236/00</u> to <u>C08F236/22</u> the method of polymerisation may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/58</u> in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of 4/00 to 4/60, 4/62, 4/64, 4/642, 4/642B, 4/643 or 4/68 to 4/82 in the form of C-Sets. Example: (<u>C08F236/10</u> , <u>C08F4/46</u>)
C08F 236/02	• the radical having only two carbon-to-carbon double bonds
C08F 236/04	• conjugated
C08F 236/045	• {conjugated hydrocarbons other than butadiene or isoprene}
C08F 236/06	• Butadiene
C08F 236/08	• Isoprene
C08F 236/10	• with vinyl-aromatic monomers
C08F 236/12	• with nitriles
C08F 236/14	• containing elements other than carbon and hydrogen
C08F 236/16	• containing halogen
C08F 236/18	• containing chlorine
C08F 236/20	• unconjugated
C08F 236/22	• the radical having three or more carbon-to-carbon double bonds

C08F2: scope of the allowed Combination sets with C08F265/06 as base symbol

C08F 265/00	Macromolecular compounds obtained by polymerising monomers on to polymers of unsaturated monocarboxylic acids or derivatives thereof as defined in group <u>C08F 20/00</u>
C08F 265/02	• on to polymers of acids, salts or anhydrides
C08F 265/04	• on to polymers of esters
C08F 265/06	• Polymerisation of acrylate or methacrylate esters on to polymers thereof
	Notes
	i In <u>C08F265/06</u> the method of polymerisation may be indicated using the subdivision of <u>C08F2/02</u> , <u>C08F2/16</u> , <u>C08F2/18</u> or <u>C08F2/22</u> in the form of C-Sets. Example: (<u>C08F265/06</u> , <u>C08F2/16</u>)
C08F 265/08	• on to polymers of nitriles
C08F 265/10	• on to polymers of amides or imides

C08F2: scope of the allowed Combination sets with C08F279/02-C08F279/04 as base symbol

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

Notes

i In C08F279/02 and C08F279/04 the method of polymerisation may be indicated using the subdivision of C08F2/02, C08F2/16, C08F2/18 or C08F2/22 in the form of C-Sets. Example: (C08F279/02, C08F2/22)

C08F 279/02

• on to polymers of conjugated dienes

C08F 279/04

• Vinyl aromatic monomers and nitriles as the only monomers

C08F 279/06

• Vinyl aromatic monomers and methacrylates as the only monomers

C08F2: scope of the allowed Combination sets with C08F283 as base symbol

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 })
C08F 283/002	{on to polymers modified by after-treatment}
C08F 283/004	{modified by incorporation of silicon atoms}
C08F 283/006	{ on to polymers provided for in C08G 18/00 } ({ C08F 283/004 takes precedence })
C08F 283/008	{on to unsaturated polymers}
C08F 283/01	on to unsaturated polyesters ({ C08F 283/004 takes precedence })
<p style="text-align: center;">Notes</p> <p>1 After the symbol of group C08F283/01 - C08F283/14 and using the C-Sets, notations concerning the method of polymerisation or the nature of the catalyst can be indicated. These notations are selected from groups C08F2/00, C08F2/16, C08F2/46, C08F2/48, C08F2/50, C08F4/00, C08F4/04, C08F4/06, C08F4/28 and C08F4/42. Example: (C08F283/01, C08F2/16)</p>	
C08F 283/02	on to polycarbonates or saturated polyesters ({ C08F 283/004 takes precedence })
C08F 283/04	on to polycarbonamides, polyesteramides or polyimides ({ C08F 283/004 takes precedence })
C08F 283/045	{on to unsaturated polycarbonamides, polyesteramides or polyimides}
C08F 283/06	on to polyethers, polyoxymethylenes or polyacetals ({ C08F 283/004 takes precedence })
C08F 283/065	{on to unsaturated polyethers, polyoxymethylenes or polyacetals}
C08F 283/08	on to polyphenylene oxides
C08F 283/085	{on to unsaturated polyphenylene oxides}
C08F 283/10	on to polymers containing more than one epoxy radical per molecule ({ C08F 283/004 takes precedence })
C08F 283/105	{on to unsaturated polymers containing more than one epoxy radical per molecule}
C08F 283/12	on to polysiloxanes
C08F 283/122	{on to saturated polysiloxanes containing hydrolysable groups, e.g. alkoxy-, thio-, hydroxy-}
C08F 283/124	{on to polysiloxanes having carbon-to-carbon double bonds}
C08F 283/126	{on to polysiloxanes being the result of polycondensation and radical polymerisation reactions}
C08F 283/128	{on to reaction products of polysiloxanes having at least one Si-H bond and compounds having carbon-to-carbon double bonds}
C08F 283/14	on to polymers obtained by ring-opening polymerisation of carbocyclic compounds having one or more carbon-to-carbon double bonds in the carbocyclic ring, i.e. polyalkeneamers ({ C08F 283/004 takes precedence })

C08F2: scope of the allowed Combination sets with C08F291/00 as base symbol

C08F 291/00	Macromolecular compounds obtained by polymerising monomers on to macromolecular compounds according to more than one of the groups <u>C08F 251/00</u> to <u>C08F 289/00</u>
	Notes
	i In <u>C08F291/00</u> the method of polymerisation may be indicated using the subdivision of <u>C08F2/02</u> , <u>C08F2/16</u> , <u>C08F2/18</u> or <u>C08F2/22</u> in the form of C-Sets. Example: (<u>C08F291/00</u> , <u>C08F2/16</u>)
C08F 291/02	• on to elastomers
C08F 291/04	• on to halogen-containing macromolecules
C08F 291/06	• on to oxygen-containing macromolecules
C08F 291/08	• on to macromolecules containing hydroxy radicals
C08F 291/10	• on to macromolecules containing epoxy radicals
C08F 291/12	• on to nitrogen-containing macromolecules
C08F 291/14	• on to sulfur-containing macromolecules
C08F 291/16	• on to macromolecules containing more than two metal atoms
C08F 291/18	• on to irradiated or oxidised macromolecules (epoxidised <u>C08F 291/10</u>)
C08F 291/185	• [The monomer(s) not being present during the irradiation or the oxidation of the macromolecule]

C08F2: Definitions excerpt

Special rules of classification within this group

Although every polymerization is conducted according to a process and using a catalyst, in C08F2/00 or subgroups, only documents are classified which disclose the polymerization process as the invention or as a characterizing feature of the invention.

Groups C08F2/00 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 C08F2/00 or subgroups using a C-set., e.g. (C08F34/04, C08F2/14) 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 C08F2/00 or subgroups thereof is given without using the C-set format.

(2) In the groups C08F10/00, C08F110/00 and C08F210/00 or sub groups, all symbols of C08F2/00 to C08F2/60 may be used.

(3) In C08F2/00 to C08F2/60, the last place rule is only applied starting from the two dots level.

(4) In the subgroups C08F2/18 to C08F2/30, 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 (C08F2/22). If the invention lies in the emulsifying agent, the document is classified in the groups C08F2/24 to C08F2/30.

In C08F2/00 and C08F2/001, an additional Indexing Code C08F2400/02 is added, unlinked or as a C-Set, if the invention relates to control or adjustment of polymerization parameters.

Further subdivisions:

In the sub groups C08F2/46 to C08F2/60, only polymerization processes involving ethylenically unsaturated monomers are classified, not crosslinking of preformed polymers.

Relationship between large subject matter areas

In C08F2/44, 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 C08F251/00 to C08F292/00 would be appropriate.

Crosslinked polymers are classified in C08F8/00 or C08J3/24, but also may be classified only in the group for the polymer as such.

Guidance & comments:

- ❑ Specific requirement for polyolefins in relation to their preparation process:
 - If a polyolefin is produced according to a process and the invention lies (at least partly) in the process, it is mandatory to classify it as a Combination set in the form of (C08F?10/--, C08F2/--).

Guidance & comments:

- ❑ In the part of the Definitions for C08F2/00 shown above, some errors or discrepancies with Notes in the Scheme have been noticed:
 - Discrepancy between scope of usable C08F2 range in the Notes of C08F10/110/210 (C08F2/60 excluded) and the Definitions thereof (C08F2/60 included). Since the Definitions allow a broader range of symbols for C08F2, they should be considered binding until this discrepancy is clarified.
 - The information (in the Definitions of C08F2) relating to the additional indexing code **C08F2400/02** (i.e. used within a Combination set) is erroneous, since this indexing code **should not be used within a**

C08F 2400/00	Characteristics for processes of polymerization
C08F 2400/02	↳ Control or adjustment of polymerization parameters

Examples for polyolefins when the process matters (C08F2):

□ Example 1: US2014/0142260

➤ Solution: (in view of Combination sets with C08F2 as second symbol and associated indexing codes)

- Combination set: C08F110/02, C08F2/14 (INV.)

□ Example 2: US2014/0135467

➤ Solution: (in view of Combination sets with C08F2 as second symbol and associated indexing codes)

- Combination set: C08F210/16, C08F2/34 (INV.)

& single symbol indexing code:

C08F2400/02 (ADD.)

Recapitulative table for polyolefins: Combination sets with C08F2 as second symbol

Base symbol selected from:	C08F10/00 to C08F10/14; C08F110/00 to C08F110/14; C08F210/00 to C08F210/18
Polymer	
Second symbol selected from:	C08F2/00 to C08F2/60
Polymerisation process	
Number of symbols in a valid Combination set:	2
Combination set is of the type:	INV.
Allocation of Combination set(s) is:	Mandatory (see Definitions)
Associated unlinked indexing code(s):	C08F2400/02

Polymerisation catalysts (C08F4)

Scope of the Combination sets:

Guidance & comments:

Examples for polyolefins:

Recapitulative table for polyolefins:

Polymerisation catalysts (C08F4): Scope of the Combination sets

- ❑ **C08F4** is **never used as a base symbol** within a Combination set, but **only in second position therein** and the Combination set is (INV.) information
 - C08F4 may also be used as an single symbol (INV.) classification symbol.
- ❑ Catalysts defined in C08F4 may be linked to polymers selected from the following main groups as base symbols:
 - ❖ **C08F10, C08F110, C08F210**
 - ❖ **C08F12, C08F112, C08F212**
 - ❖ **C08F36, C08F136, C08F236**
 - ❖ **C08F283**
- ❑ The precise scope of the base symbols and of the “linkable” subgroups within **C08F4** are defined in the respective NOTES of the Scheme and in the Definitions

C08F4/00: Notes

C08F 4/00

Polymerisation catalysts (catalysts in general B01J)



Notes



1. Group C08F4/00 and subgroups can be incomplete according to the following classification rules: - if a catalyst is specifically used for only one type of polymer, it is not classified in C08F4/00 ; - in such a case, the classification symbol of C08F4/00 providing for the catalyst may be used as a symbol for a C-Set in the groups providing for the polymer, e.g. (C08F12/04 , C08F4/62) - this method of classification is applied only when a note after the group providing for the polymer explicitly indicates which symbols of C08F4/00 may be used for forming the C-set.
2. When classifying in group C08F4/00 , the type of catalyst can be further indexed by using indexing codes chosen from C08F2410/00 , C08F2420/00 or their subgroups

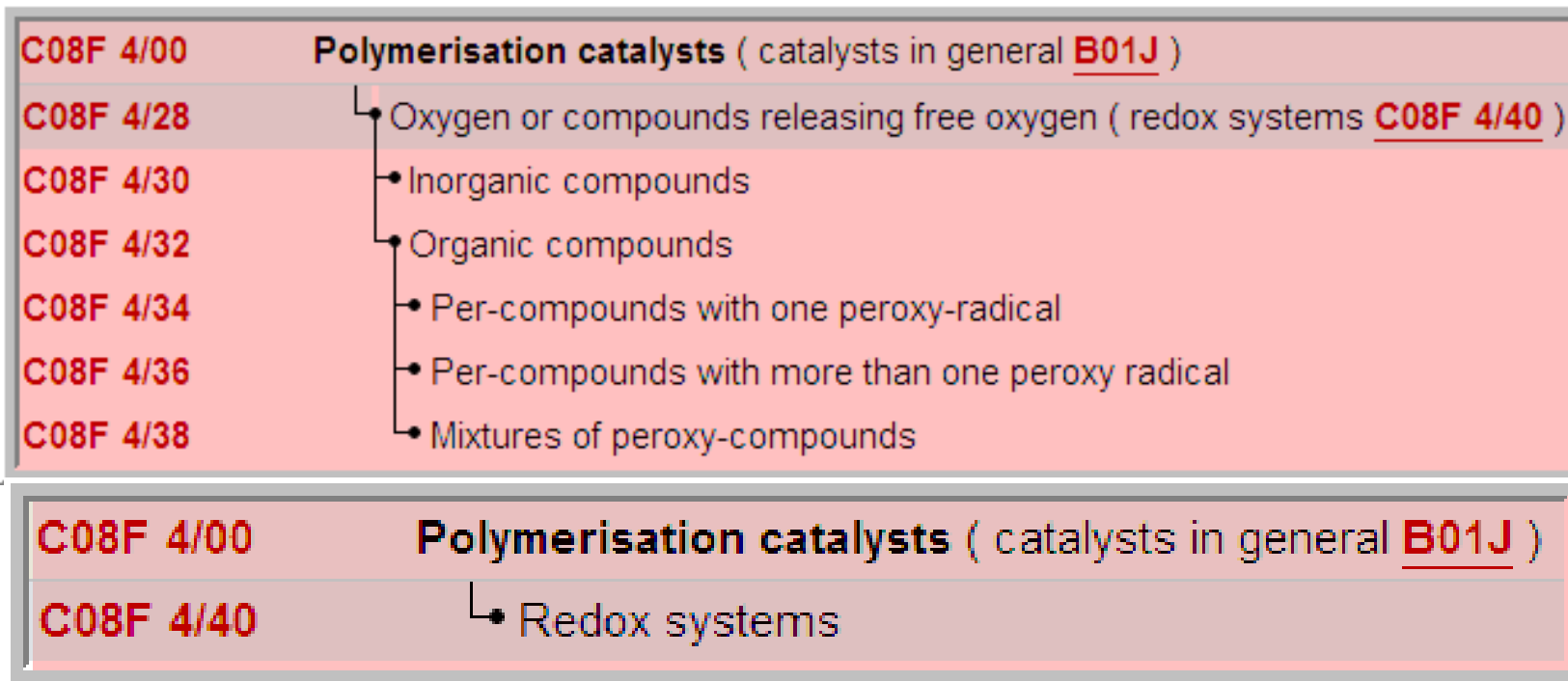
C08F4: scheme (part I)

C08F 4/00	Polymerisation catalysts (catalysts in general <u>B01J</u>)
C08F 4/005	• {Friedel-Crafts catalysts in general}
C08F 4/02	• Carriers therefor
C08F 4/022	• {Magnesium halide as support anhydrous or hydrated or complexed by means of a Lewis base for Ziegler-type catalysts}
C08F 4/025	• {Metal oxides}
C08F 4/027	• {Polymers}
C08F 4/04	• Azo-compounds

C08F4: scheme (part II)

C08F 4/00	Polymerisation catalysts (catalysts in general B01J)
C08F 4/06	Metallic compounds other than hydrides and other than metallo-organic compounds; Boron halide or aluminium halide complexes with organic compounds containing oxygen
C08F 4/08	• of alkali metals
C08F 4/083	• {an alkali metal bound to oxygen}
C08F 4/086	• {an alkali metal bound to nitrogen, e.g. $\text{LiN}(\text{C}_2\text{H}_5)_2$ }
C08F 4/10	• of alkaline earth metals, zinc, cadmium, mercury, copper or silver
C08F 4/12	• of boron, aluminium, gallium, indium, thallium or rare earths
C08F 4/14	• Boron halides or aluminium halides; Complexes thereof with organic compounds containing oxygen
C08F 4/16	• of silicon, germanium, tin, lead, titanium, zirconium or hafnium
C08F 4/18	• Oxides
C08F 4/20	• of antimony, bismuth, vanadium, niobium or tantalum
C08F 4/22	• of chromium, molybdenum or tungsten
C08F 4/24	• Oxides
C08F 4/26	• of manganese, iron group metals or platinum group metals

C08F4: scheme (part III)



- Reference is made to “Espacenet” with regard to the details concerning the remaining (extensive) parts of the C08F4 scheme

C08F4: scope of the allowed Combination sets with C08F10 as base symbol

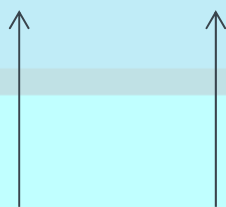
C08F 10/00	Homopolymers and copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond
	Notes
	i In groups <u>C08F10/00</u> to <u>C08F10/14</u> the method of polymerisation or the nature of the catalyst may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/58</u> or of <u>C08F4/00</u> to <u>C08F4/82</u> in the form of C-Sets. Example: (<u>C08F10/02</u> , <u>C08F4/651</u>)
C08F 10/02	• Ethene
C08F 10/04	• Monomers containing three or four carbon atoms
C08F 10/06	• Propene
C08F 10/08	• Butenes
C08F 10/10	• Isobutene
C08F 10/14	• Monomers containing five or more carbon atoms

C08F4: scope of the allowed Combination sets with C08F110 as base symbol

C08F 110/00	Homopolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond
	Notes
	i In groups <u>C08F110/00</u> to <u>C08F110/14</u> the method of polymerisation or the nature of the catalyst may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/58</u> or of <u>C08F4/00</u> to <u>C08F4/82</u> in the form of C-Sets. Example: (<u>C08F110/14</u> , <u>C08F4/6592</u>)
C08F 110/02	• Ethene
C08F 110/04	• monomers containing three or four carbon atoms
C08F 110/06	• Propene
C08F 110/08	• Butenes
C08F 110/10	• Isobutene
C08F 110/14	• Monomers containing five or more carbon atoms

C08F4: scope of the allowed Combination sets with C08F210 as base symbol

C08F 210/00	Copolymers of unsaturated aliphatic hydrocarbon having only one carbon-to-carbon double bond
	Notes
	i In <u>C08F210/00</u> to <u>C08F210/18</u> the method of polymerisation or the nature of the catalyst may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/58</u> or of <u>C08F4/00</u> to <u>C08F4/82</u> in the form of C-Sets. Example: (<u>C08F210/06</u> , <u>C08F4/04</u>)
C08F 210/02	• Ethene
C08F 210/04	• Monomers containing three or four carbon atoms
C08F 210/06	• Propene
C08F 210/08	• Butenes
C08F 210/10	• Isobutene
C08F 210/12	• with conjugated diolefins, e.g. butyl rubber
C08F 210/14	• Monomers containing five or more carbon atoms
C08F 210/16	• Copolymers of ethene with alfa-alkenes, e.g. EP rubbers
C08F 210/18	• with non-conjugated dienes, e.g. EPT rubbers



C08F4: scope of the allowed Combination sets with C08F12 as base symbol

Notes

1. Until March 2012, in groups C08F12/04 to C08F12/08 the method of polymerisation might be indicated using the subdivision of C08F2/02 to C08F2/06, C08F2/16 to C08F2/30, C08F2/34 or C08F2/38 to C08F2/46 in the form of C-sets; the nature of the catalyst might be indicated using the subdivision of C08F4/00 to C08F4/60, C08F4/62, C08F4/64 or C08F4/68 to C08F4/82 in the form of C-Sets. Example: (C08F12/08, C08F2/20) 2. From April 2012 on, in groups C08F12/00 to C08F12/36 the method of polymerisation may be indicated using the subdivision of C08F2/00 to C08F2/60 in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of C08F4/00 to C08F4/82 in the form of C-Sets. Example: (C08F12/08, C08F2/56)

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
C08F 12/02	Monomers containing only one unsaturated aliphatic radical
C08F 12/04	containing one ring
C08F 12/06	Hydrocarbons
C08F 12/08	Styrene
C08F 12/12	Monomers containing a branched unsaturated aliphatic radical or a ring substituted by an alkyl radical
C08F 12/14	substituted by hetero atoms or groups containing heteroatoms
C08F 12/16	Halogens
C08F 12/18	Chlorine
C08F 12/20	Fluorine
C08F 12/22	Oxygen
C08F 12/24	Phenols or alcohols
C08F 12/26	Nitrogen
C08F 12/28	Amines
C08F 12/30	Sulfur
C08F 12/32	containing two or more rings
C08F 12/34	Monomers containing two or more unsaturated aliphatic radicals
C08F 12/36	Divinylbenzene

C08F4: scope of the allowed Combination sets with C08F112 as base symbol

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
	Notes
	i From April 2012 on, in groups <u>C08F112/00</u> to <u>C08F112/36</u> the method of polymerisation may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/60</u> in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of <u>C08F4/00</u> to <u>C08F4/82</u> in the form of C-Sets. Example: (<u>C08F112/08</u> , <u>C08F4/70</u>)
C08F 112/02	• Monomers containing only one unsaturated aliphatic radical
C08F 112/04	• containing one ring
C08F 112/06	• Hydrocarbons
C08F 112/08	• Styrene
C08F 112/12	• Monomers containing a branched unsaturated aliphatic radical or a ring substituted by an alkyl radical
C08F 112/14	• substituted by hetero atoms or groups containing heteroatoms
C08F 112/32	• containing two or more rings
C08F 112/34	• Monomers containing two or more unsaturated aliphatic radicals
C08F 112/36	• Divinylbenzene

C08F4: scope of the allowed Combination sets with C08F212 as base symbol

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

Notes

- 1** From April 2012 on, in groups C08F212/00 to C08F212/36 the method of polymerisation may be indicated using the subdivision of C08F2/00 to C08F2/60 in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of C08F4/00 to C08F4/82 in the form of C-Sets. Example: (C08F212/08 , C08F4/16)

- C08F 212/02** • Monomers containing only one unsaturated aliphatic radical
- C08F 212/04** • containing one ring
- C08F 212/06** • Hydrocarbons
- C08F 212/08** • Styrene
- C08F 212/10** • with nitriles
- C08F 212/12** • Monomers containing a branched unsaturated aliphatic radical or a ring substituted by an alkyl radical
- C08F 212/14** • substituted by heteroatoms or groups containing heteroatoms
- C08F 212/145** • {the heteroatoms being part of ester groups derived from unsaturated acids}
- C08F 212/32** • containing two or more rings
- C08F 212/34** • Monomers containing two or more unsaturated aliphatic radicals
- C08F 212/36** • Divinylbenzene

C08F4: scope of the allowed Combination sets with C08F36 as base symbol

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 (<u>C08F 32/00</u> takes precedence)
	Notes
	i In <u>C08F36/00</u> to <u>C08F36/22</u> the method of polymerisation may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/58</u> in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of 4/00 to 4/60, 4/62, 4/64, 4/642, 4/642B, 4/643 or 4/68 to 4/82 in the form of C-Sets. Example: (<u>C08F36/04</u> , <u>C08F4/642</u>)
C08F 36/02	the radical having only two carbon-to-carbon double bonds
C08F 36/04	conjugated
C08F 36/045	{conjugated hydrocarbons other than butadiene or isoprene}
C08F 36/06	Butadiene
C08F 36/08	Isoprene
C08F 36/14	containing elements other than carbon and hydrogen
C08F 36/16	containing halogen
C08F 36/18	containing chlorine
C08F 36/20	unconjugated
C08F 36/22	the radical having three or more carbon-to-carbon double bonds

C08F4: scope of the allowed Combination sets with C08F136 as base symbol

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 (<u>C08F 132/00</u> takes precedence)
	Notes
	I In <u>C08F136/00</u> to <u>C08F136/22</u> the method of polymerisation may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/58</u> in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of <u>C08F4/00</u> to <u>C08F4/60</u> , <u>C08F4/62</u> , <u>C08F4/64</u> , <u>C08F4/642</u> , <u>C08F4/642 B</u> , <u>C08F4/643</u> or <u>C08F4/68</u> to <u>C08F4/82</u> in the form of C-Sets. Example: (<u>C08F136/18</u> , <u>C08F2/26</u>)
C08F 136/02	• the radical having only two carbon-to-carbon double bonds
C08F 136/04	• conjugated
C08F 136/045	• [conjugated hydrocarbons other than butadiene or isoprene]
C08F 136/06	• Butadiene
C08F 136/08	• Isoprene
C08F 136/14	• containing elements other than carbon and hydrogen
C08F 136/16	• containing halogen
C08F 136/18	• containing chlorine
C08F 136/20	• unconjugated
C08F 136/22	• the radical having three or more carbon-to-carbon double bonds

C08F4: scope of the allowed Combination sets with C08F236 as base symbol

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 (<u>C08F 232/00</u> takes precedence)
	Notes
	i In <u>C08F236/00</u> to <u>C08F236/22</u> the method of polymerisation may be indicated using the subdivision of <u>C08F2/00</u> to <u>C08F2/58</u> in the form of C-Sets; the nature of the catalyst may be indicated using the subdivision of 4/00 to 4/60, 4/62, 4/64, 4/642, 4/642B, 4/643 or 4/68 to 4/82 in the form of C-Sets. Example: (<u>C08F236/10</u> , <u>C08F4/46</u>)
C08F 236/02	• the radical having only two carbon-to-carbon double bonds
C08F 236/04	• conjugated
C08F 236/045	• [conjugated hydrocarbons other than butadiene or isoprene]
C08F 236/06	• Butadiene
C08F 236/08	• Isoprene
C08F 236/10	• with vinyl-aromatic monomers
C08F 236/12	• with nitriles
C08F 236/14	• containing elements other than carbon and hydrogen
C08F 236/16	• containing halogen
C08F 236/18	• containing chlorine
C08F 236/20	• unconjugated
C08F 236/22	• the radical having three or more carbon-to-carbon double bonds

C08F4: scope of the allowed Combination sets with C08F283/01-C08F283/14 as base symbol

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 })
C08F 283/002	{on to polymers modified by after-treatment}
C08F 283/004	{modified by incorporation of silicon atoms}
C08F 283/006	{ on to polymers provided for in C08G 18/00 } ({ C08F 283/004 takes precedence })
C08F 283/008	{on to unsaturated polymers}
C08F 283/01	on to unsaturated polyesters ({ C08F 283/004 takes precedence })
<p style="text-align: center;">Notes</p> <p>1 After the symbol of group C08F283/01 - C08F283/14 and using the C-Sets, notations concerning the method of polymerisation or the nature of the catalyst can be indicated. These notations are selected from groups C08F2/00, C08F2/16, C08F2/46, C08F2/48, C08F2/50, C08F4/00, C08F4/04, C08F4/06, C08F4/28 and C08F4/42. Example: (C08F283/01, C08F2/16)</p>	
C08F 283/02	on to polycarbonates or saturated polyesters ({ C08F 283/004 takes precedence })
C08F 283/04	on to polycarbonamides, polyesteramides or polyimides ({ C08F 283/004 takes precedence })
C08F 283/045	{on to unsaturated polycarbonamides, polyesteramides or polyimides}
C08F 283/06	on to polyethers, polyoxymethylenes or polyacetals ({ C08F 283/004 takes precedence })
C08F 283/065	{on to unsaturated polyethers, polyoxymethylenes or polyacetals}
C08F 283/08	on to polyphenylene oxides
C08F 283/085	{on to unsaturated polyphenylene oxides}
C08F 283/10	on to polymers containing more than one epoxy radical per molecule ({ C08F 283/004 takes precedence })
C08F 283/105	{on to unsaturated polymers containing more than one epoxy radical per molecule}
C08F 283/12	on to polysiloxanes
C08F 283/122	{on to saturated polysiloxanes containing hydrolysable groups, e.g. alkoxy-, thio-, hydroxy-}
C08F 283/124	{on to polysiloxanes having carbon-to-carbon double bonds}
C08F 283/126	{on to polysiloxanes being the result of polycondensation and radical polymerisation reactions}
C08F 283/128	{on to reaction products of polysiloxanes having at least one Si-H bond and compounds having carbon-to-carbon double bonds}
C08F 283/14	on to polymers obtained by ring-opening polymerisation of carbocyclic compounds having one or more carbon-to-carbon double bonds in the carbocyclic ring, i.e. polyalkenamers ({ C08F 283/004 takes precedence })

Guidance & comments:

- ❑ Specific requirement for polyolefins in relation to the polymerization catalyst used during their preparation:
 - If a polyolefin is produced by using a catalyst and the invention lies (at least partly) in the catalyst, it is mandatory to classify it as a Combination set in the form of (C08F?10/--, C08F4/--).

Guidance & comments:

- Additional indexing codes which may be allocated as single symbol (**ADD.**) information in the field of polymer catalyst for C08F type polymers

C08F 2410/00	Catalyst preparation (not used)
C08F 2410/01	• Additive used together with the catalyst, excluding compounds containing Al or B
C08F 2410/02	• Anti-static agent incorporated into the catalyst
C08F 2410/03	• Multinuclear procatalyst, i.e. containing two or more metals, being different or not
C08F 2410/04	• Dual catalyst, i.e. use of two different catalysts, where none of the catalysts is a metallocene
C08F 2410/05	• Transitioning, i.e. transition from one catalyst to another with use of a deactivating agent

C08F 2420/00	Metallocene catalysts (not used)
C08F 2420/01	• Cp or analog bridged to a non-Cp X neutral donor
C08F 2420/02	• Cp or analog bridged to a non-Cp X anionic donor
C08F 2420/03	• Cp or analog not bridged to a non-Cp X ancillary neutral donor
C08F 2420/04	• Cp or analog not bridged to a non-Cp X ancillary anionic donor
C08F 2420/05	• Cp or analog where at least one of the carbon atom of the Cp ring is replaced by a heteroatom
C08F 2420/06	• Cp or analog where at least one of the carbon atoms of the ring is replaced by a heteroatom

Examples for polyolefins when the catalyst matters (C08F4):

□ Example 1: US2013/0066022

➤ Solution: (in view of Combination sets with C08F4 as second symbol and associated indexing codes)

- Combination set: C08F110/02, C08F4/025 (INV.)

- Combination set: C08F110/02, C08F4/64193 (INV.)

& single symbol indexing code:

C08F2410/04 (ADD.)

□ Example 2: US2010/0324238

➤ Solution: (in view of Combination sets with C08F4 as second symbol and associated indexing codes)

- Combination set: C08F210/08, C08F4/65927 (INV.)

& single symbol indexing code:

C08F2420/05 (ADD.)

Recapitulative table for polyolefins: Combination sets with C08F4 as second symbol

Base symbol selected from:	C08F10/00 to C08F10/14; C08F110/00 to C08F110/14; C08F210/00 to C08F210/18
Polymer	
Second symbol selected from:	C08F4/00 to C08F4/82
Polymerisation catalysts	
Number of symbols in a valid Combination set:	2
Combination set is of the type:	INV.
Allocation of Combination set(s) is:	Mandatory
Associated unlinked indexing code(s):	C08F2410/01 to C08F2410/05 C08F2420/01 to C08F2420/06

Characteristics or properties of obtained polymers; Use thereof (C08F2500)

Scope of the Combination sets:

Annexe relating to details which are missing in the Definitions:

Examples:

Recapitulative table for C08F110 and C08F210:

**Characteristics or properties of obtained polymers; Use thereof (C08F2500):
Scope of the Combination sets**

- ❑ **C08F2500** is **never used as a base symbol** within a Combination set, but **only in the last position(s) therein** (i.e. after the symbols relating to the exemplified homopolymer or copolymer) and the Combination set is (**ADD.**) information only.
 - C08F2500 should not be used as a single symbol (ADD.) classification symbol.

- ❑ **Combination sets comprising one or more C08F2500 symbols are allocated to homopolymers or copolymers** of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon bond and **characterized by special characteristics, properties and/or use of the polymer produced in the Examples**

- ❑ In other words, C08F2500 may only be linked to polymers selected from the following main groups (and their sub-notations) as base symbols:
 - ❖ **C08F110, C08F210**

**Characteristics or properties of obtained polymers; Use thereof (C08F2500):
Scope of the Combination sets**

- Special properties mentioned by the applicant but not reflected in the Examples are also indexed

- When the above mentioned conditions apply, the indexing in the form of Combination sets is mandatory.

Characteristics or properties of obtained polymers; Use thereof (C08F2500):

Scope according to the Scheme (only for C08F110 and C08F210)

<input type="checkbox"/> C08F 2500/00	Characteristics or properties of obtained polymers; Use thereof (not used)
<input type="checkbox"/> C08F 2500/01	• High molecular weight
<input type="checkbox"/> C08F 2500/02	• Low molecular weight
<input type="checkbox"/> C08F 2500/03	• Narrow molecular weight distribution
<input type="checkbox"/> C08F 2500/04	• Broad molecular weight distribution
<input type="checkbox"/> C08F 2500/05	• Bimodal or multimodal molecular weight distribution
<input type="checkbox"/> C08F 2500/06	• Narrow composition distribution
<input type="checkbox"/> C08F 2500/07	• High density
<input type="checkbox"/> C08F 2500/08	• Low density
<input type="checkbox"/> C08F 2500/09	• Long chain branches
<input type="checkbox"/> C08F 2500/10	• Short chain branches
<input type="checkbox"/> C08F 2500/11	• Melt tension or melt strength
<input type="checkbox"/> C08F 2500/12	• Melt flow index or melt flow ratio
<input type="checkbox"/> C08F 2500/13	• Environmental stress cracking resistance
<input type="checkbox"/> C08F 2500/14	• Die swell or die swell ratio or swell ratio
<input type="checkbox"/> C08F 2500/15	• Isotactic
<input type="checkbox"/> C08F 2500/16	• Syndiotactic
<input type="checkbox"/> C08F 2500/17	• Viscosity
<input type="checkbox"/> C08F 2500/18	• Bulk density
<input type="checkbox"/> C08F 2500/19	• Shear ratio or shear ratio index
<input type="checkbox"/> C08F 2500/20	• Activation energy or enthalpy
<input type="checkbox"/> C08F 2500/21	• Rubbery or elastomeric properties
<input type="checkbox"/> C08F 2500/22	• Sticky polymer
<input type="checkbox"/> C08F 2500/23	• Waxy properties
<input type="checkbox"/> C08F 2500/24	• Polymer with special particle form or size
<input type="checkbox"/> C08F 2500/25	• Cycloolefine
<input type="checkbox"/> C08F 2500/26	• Use as polymer for film forming

Annexe (I):

Informative details which are missing at page 36 of the C08F Definitions

If **different specific examples** are disclosed for which a different combination of codes according to the present scheme is appropriate, **multiple indexing** according to the present scheme **is applied**.

The symbol **C08F2500/01** is used if the polymers of the examples have a **molecular weight of higher than about 800.000 g/mol** or if the polymers are described as having a high molecular weight.

The symbol **C08F2500/02** is used if the polymers of the examples have a **molecular weight of lower than about 100.000 g/mol** or if the polymers are described as having a low molecular weight

The symbol **C08F2500/03** is used if the polymers of the examples have a **molecular weight distribution of less than 3** or if the polymers are described as having a narrow molecular weight.

Annexe (II):

The symbol **C08F2500/04** is used if the polymers of the examples have a **molecular weight distribution which is broader than 6** or if the polymers are described as having a broad molecular weight distribution.

The symbol **C08F2500/05** is used if the polymers of the examples have a bimodal or multimodal molecular weight distribution or if the polymers are described as having a bimodal or multimodal molecular weight distribution. Normally, the symbol C08F2500/05 is used for polymers obtained from processes, which are classified in C08F2/001, as a single class or as a Combination set in combination with polymer product classes, see definitions of the C08F- polymer product classes concerned.

The symbol **C08F2500/06** is used if the polymers are described as having a narrow composition distribution.

Annexe (III):

The symbol **C08F2500/07** is used if the polymers of the examples have **a density of higher than 0,95 g/cm³** or if the polymers are described as having a high density.

The symbol **C08F2500/08** is used if the polymers of the examples have **a density of lower than 0,91 g/cm³** or if the polymers are described as having a low density.

The symbol **C08F2500/09** is used if the polymers of the examples have long chain branches or if the polymers are described as having long chain branches.

The symbol **C08F2500/10** is used if short chain branches are mentioned as a characterizing parameter, **e.g. in tables**.

Annexe (IV):

The symbol **C08F2500/11** is used if the polymers of the examples are characterized by their melt strength or their melt tension or if the polymers are described as having a certain melt strength or melt tension.

The symbol **C08F2500/12** is used if the polymers of the examples are characterized by their melt flow rate, melt flow ratio or melt index or if the polymers are described as having a certain melt flow rate, melt flow ratio or melt index.

The symbol **C08F2500/13** is used if the polymers of the examples are characterized by their environmental stress cracking resistance or if the polymers are described as having a certain environmental stress cracking resistance.

Annexe (V):

The symbol **C08F2500/14** is used if the polymers of the examples are characterized by their die swell ratio or swell ratio or if the polymers are described as having a certain die swell ratio or swell ratio.

The symbol **C08F2500/15** is used if the polymers of the examples are characterized by their isotactic index or sequence length or if the polymers are described as having a certain isotactic index or sequence length.

The symbol **C08F2500/16** is used if the polymers of the examples are characterized by their syndiotactic index or sequence length or if the polymers are described as having a certain syndiotactic index or sequence length.

Annexe (VI):

The symbol **C08F2500/17** is used if the polymers of the examples are characterized by their viscosity or if the polymers are described as having a certain viscosity.

The symbol **C08F2500/18** is used if the polymers of the examples are characterized by their bulk density or if the polymers are described as having a certain bulk density.

The symbol **C08F2500/19** is used if the polymers of the examples are characterized by their shear ratio or shear viscosity or if the polymers are described as having a certain shear ratio or shear viscosity.

Annexe (VII):

The symbol **C08F2500/20** is used if the polymers of the examples are characterized by their activation energy, heat of fusion or DSC features or if the polymer are described as having a certain activation energy, heat of fusion or DSC features.

The symbol **C08F2500/21** is used if the polymers of the examples are characterized by their elasticity or their rubbery properties or if the polymers are described as having a certain elasticity or rubbery properties.

The symbol **C08F2500/22** is used if the polymers are described as being sticky.

The symbol **C08F2500/23** is used if the polymers are described as being waxy. In this case, they normally also have a low molecular weight.

Annexe (VIII):

The symbol **C08F2500/24** is used if the polymers of the examples are characterized by their particle behaviour, particle size or particle size distribution or if the polymers are described as having a certain particle behaviour, particle size or particle size distribution

The symbol **C08F2500/25** is used if monomers are used which have a cyclic structure, e.g. (substituted) norbornene, norbornadiene, vinylcyclohexane...

The symbol **C08F2500/26** is used if the polymers of the examples are characterized by film related properties or if the polymers are described as being suitable for film forming.

Examples for Combination sets comprising C08F2500 symbols :

❑ Example 1: US2014/0142262

- Solution: [in view of Combination sets comprising C08F2500 symbol(s)]
- Combination set: C08F110/06, C08F2500/12 (ADD.)

❑ Example 2: US2013/0338320

- Solution: [in view of Combination sets comprising C08F2500 symbol(s)]
- Combination set: C08F210/16, C08F210/14, C08F2500/12, C08F2500/18, C08F2500/24 (ADD.)

❑ Example 3: US2012/0214890

- Solution: [in view of Combination sets comprising C08F2500 symbol(s)]
- Combination set: C08F210/06, C08F210/08, C08F210/16, C08F2500/20 (ADD.)
- Combination set: C08F210/06, C08F210/08, C08F2500/20 (ADD.)
- Combination set: C08F210/06, C08F210/16, C08F2500/20 (ADD.)

Recapitulative table for C08F110: Combination sets with C08F2500 symbol(s)

Base symbol is selected from:	C08F110/00 to C08F110/14
Second and (further) symbol(s) is/are selected from:	C08F2500/01 to C08F2500/26
Number of symbols in a valid Combination set:	>= 2
Combination set is of the type:	ADD.
Allocation of Combination set(s) is:	Mandatory (see Definitions)
Associated unlinked indexing code(s):	none

Recapitulative table for C08F210: Combination sets with C08F2500 symbol(s)

Base symbol is selected from:	C08F210/00 to C08F210/18
Symbol(s) for the comonomer(s) in minority in the copolymer is/are selected from:	C08F210/00 to C08F238/04
further symbol(s) is/are selected from:	C08F2500/01 to C08F2500/26
Number of symbols in a valid Combination set:	>= 3
Combination set is of the type:	ADD.
Allocation of Combination set(s) is:	Mandatory (see Definitions)
Associated unlinked indexing code(s):	none

Post polymerization treatments (C08F6)

Scope of the Combination sets:

Guidance & comments:

Examples:

Recapitulative table:

Post-polymerisation treatments (C08F6)

□ Scope of the Combination sets:

➤ special rule for the Combination sets: (Scheme & Definitions)

“In groups C08F6/00 to C08F6/28 the treatment of specific polymers is indicated using the subdivision of C08L23/00 to C08L57/12 in the form of Combination sets.”

C08F6: scope of the base symbol

C08F 6/00	Post-polymerisation treatments (<u>C08F 8/00</u> takes precedence; of conjugated diene rubbers <u>C08C</u>)
C08F 6/001	• [Removal of residual monomers by physical means]
C08F 6/003	• [from polymer solutions, suspensions, dispersions or emulsions without recovery of the polymer therefrom]
C08F 6/005	• [from solid polymers]
C08F 6/006	• [Removal of residual monomers by chemical reaction, e.g. scavenging]
C08F 6/008	• [Treatment of solid polymer wetted by water or organic solvents, e.g. coagulum, filter cakes]
C08F 6/02	• Neutralisation of the polymerisation mass, e.g. killing the catalyst (short-stopping <u>C08F 2/42</u>) [also removal of catalyst residues]
C08F 6/04	• Fractionation
C08F 6/06	• Treatment of polymer solutions
C08F 6/08	• Removal of catalyst residues [not used, see <u>C08F 6/02</u>]
C08F 6/10	• Removal of volatile materials, e.g. monomers, solvents
C08F 6/12	• Separation of polymers from solutions
C08F 6/14	• Treatment of polymer emulsions
C08F 6/16	• Purification
C08F 6/18	• Increasing the size of the dispersed particles
C08F 6/20	• Concentration
C08F 6/22	• Coagulation
C08F 6/24	• Treatment of polymer suspensions
C08F 6/26	• Treatment of polymers prepared in bulk [also solid polymers or polymer melts]
C08F 6/28	• Purification

C08F6: scope of the second symbol (part I)

Compositions of macromolecular compounds obtained by reactions involving only carbon-to-carbon unsaturated bonds	
C08L 23/00	Compositions of homopolymers or copolymers of unsaturated aliphatic hydrocarbons having only one carbon-to-carbon double bond; Compositions of derivatives of such polymers
C08L 25/00	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 27/00	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 a halogen; Compositions of derivatives of such polymers
C08L 29/00	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 alcohol, ether, aldehydo, ketonic, acetal or ketal radical; Compositions of hydrolysed polymers of esters of unsaturated alcohols with saturated carboxylic acids; Compositions of derivatives of such polymers
C08L 31/00	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 acyloxy radical of a saturated carboxylic acid, of carbonic acid or of a haloformic acid (of hydrolysed polymers C08L 29/00); Compositions of derivatives of such polymers
C08L 33/00	Compositions of homopolymers or 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 of salts, anhydrides, esters, amides, imides or nitriles thereof; Compositions of derivatives of such polymers
C08L 35/00	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 a carboxyl radical, and containing at least one other carboxyl radical in the molecule, or of salts, anhydrides, esters, amides, imides or nitriles thereof; Compositions of derivatives of such polymers

C08F6: scope of the second symbol (part II)

C08L 37/00	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 a heterocyclic ring containing oxygen (of cyclic esters of polyfunctional acids C08L 31/00 ; of cyclic anhydrides of unsaturated acids C08L 35/00); Compositions of derivatives of such polymers
C08L 39/00	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 a single or double bond to nitrogen or by a heterocyclic ring containing nitrogen; Compositions of derivatives of such polymers
C08L 41/00	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 a bond to sulfur or by a heterocyclic ring containing sulfur; Compositions of derivatives of such polymers
C08L 43/00	Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, each having only one carbon-to-carbon double bond, and containing boron, silicon, phosphorus, selenium, tellurium or a metal; Compositions of derivatives of such polymers (of metal salts, e.g. phenolates, alcoholates, see the parent compounds)
C08L 45/00	Compositions of homopolymers or copolymers of compounds having no unsaturated aliphatic radicals in side chain, and having one or more carbon-to-carbon double bonds in a carbocyclic or in a heterocyclic ring system; Compositions of derivatives of such polymers (of cyclic anhydrides or imides C08L 35/00 ; of cyclic esters of polyfunctional acids C08L 31/00)

C08F6: scope of the second symbol (part III)

C08L 47/00	Compositions of homopolymers or copolymers of compounds having one or more unsaturated aliphatic radicals, at least one having two or more carbon-to-carbon double bonds; Compositions of derivatives of such polymers (<u>C08L 45/00</u> takes precedence; of conjugated diene rubbers <u>C08L 9/00</u> to <u>C08L 21/00</u>)
C08L 49/00	Compositions of homopolymers or copolymers of compounds having one or more carbon-to-carbon triple bonds; Compositions of derivatives of such polymers
C08L 51/00	Compositions of graft polymers in which the grafted component is obtained by reactions only involving carbon-to-carbon unsaturated bonds (for ABS polymers <u>C08L 55/02</u>); Compositions of derivatives of such polymers
C08L 53/00	Compositions of block copolymers containing at least one sequence of a polymer obtained by reactions only involving carbon-to-carbon unsaturated bonds; Compositions of derivatives of such polymers
C08L 55/00	Compositions of homopolymers or copolymers, obtained by polymerisation reactions only involving carbon-to-carbon unsaturated bonds, not provided for in groups <u>C08L 23/00</u> to <u>C08L 53/00</u>
C08L 57/00	Compositions of unspecified polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds

C08F6: Guidance & comments

- ❑ C08F6 covers the physical modification by post-polymerisation treatment of macromolecular compounds which belong to any among the groups C08F10/00 to C08F34/04, C08F38/00 to C08F38/04, C08F110/00 to C08F134/04, C08F138/00 to C08F138/04, C08F210/00 to C08F234/04 and C08F238/00 to C08F299/08.

For some historical reasons, the above polymers of subclass C08F which are subjected to the post-treatment are identified by symbols of the corresponding range of subclass C08L (although the polymer to be treated is not to be seen as a composition of macromolecular compounds).

- ❑ C08F8/00-C08F8/50 takes precedence over C08F6/00-C08F6/28.

C08F6: Guidance & comments

- ❑ The “physical” treatment of rubbers (such as natural rubber or conjugated diene rubbers) does not belong to C08F6, but to C08C1 to C08C4

- ❑ The working-up and general processes of compounding are classified in C08J.

- ❑ NB: Item 2 in the **NOTE** of the interleaved Scheme has not been properly converted from ECLA. It should read:
“Groups C08F6/001, C08F6/006, C08F6/008, C08F6/02 and C08F6/04 take precedence over the other groups.”

C08F6: Guidance & comments

- If one or more (physical) post-polymerisation treatments are important, then one or more Combination sets are allocated, mainly on the basis of the Examples and under the proviso that said Examples relate to the treatment of a limited number of different specific polymers (e.g. three).

Examples for post-polymerization treatments (C08F6):

□ Example 1:

Separation of polyvinyl alcohol (PVA) from a solution by precipitation with the addition of salts:

➤ Combination set: C08F6/12, C08L29/04

□ Example 2:

Treatment of a hydrogel comprising a polymer based on acrylic acid and salts thereof.

➤ Combination set: C08F6/008, C08L33/02

Recapitulative table for Combination sets with C08F6 as base symbol

Base symbol selected from:	C08F6/00 to C08F6/06; C08F6/10 to C08F6/28
Post-polymerisation treatment	
Second symbol selected from:	C08L23/00 to C08L57/12
Specific polymer treated	
Number of symbols in a valid Combination set:	2
Combination set is of the type:	INV.
Allocation of Combination set(s) is:	Recommended
Associated unlinked indexing code(s):	none

Chemical modification by after-treatment (C08F8)

Scope of the Combination sets:

Guidance & comments:

Examples:

Recapitulative table:

Chemical modification by after-treatment (C08F8)

Scope of the Combination sets

- ❑ C08F8 covers the chemical modification by after-treatment of polymers which belong to any among the following ranges of groups C08F10/00 to C08F34/04, C08F38/00 to C08F38/04, C08F110/00 to C08F134/04, C08F138/00 to C08F138/04, C08F210/00 to C08F234/04 and C08F238/00 to C08F299/08 (including all sub-notations thereof).
 - C08F8 may also be used as a single symbol (INV.) classification symbol.

- ❑ The symbol relating to the starting unmodified polymer is placed in the last position of the Combination set.

- ❑ The successive chemical modification steps (as the case maybe) are then indexed from the right to the left within the Combination set, and the symbol for the last modification performed corresponds therefore to the base symbol of the Combination set.

Scope of the base symbol in the Combination sets (C08F8)

C08F 8/00	Chemical modification by after-treatment (graft polymers, block polymers, cross-linking with unsaturated monomers or with polymers <u>C08F 251/00</u> to <u>C08F 299/00</u> ; of conjugated diene rubbers <u>C08C</u> ; cross-linking in general <u>C08J</u>)
C08F 8/02	• Alkylation
C08F 8/04	• Reduction, e.g. hydrogenation
C08F 8/06	• Oxidation
C08F 8/08	• Epoxidation
C08F 8/10	• Acylation
C08F 8/12	• Hydrolysis
C08F 8/14	• Esterification
C08F 8/16	• Lactonisation
C08F 8/18	• Introducing halogen atoms or halogen-containing groups
C08F 8/20	• Halogenation
C08F 8/22	• by reaction with free halogens
C08F 8/24	• Haloalkylation
C08F 8/26	• Removing halogen atoms or halogen-containing groups from the molecule
C08F 8/28	• Condensation with aldehydes or ketones
C08F 8/30	• Introducing nitrogen atoms or nitrogen-containing groups (polymeric products of isocyanates or thiocyanates <u>C08G</u>)
C08F 8/32	• by reaction with amines
C08F 8/34	• Introducing sulfur atoms or sulfur-containing groups
C08F 8/36	• Sulfonation; Sulfation
C08F 8/38	• Sulfohalogenation
C08F 8/40	• Introducing phosphorus atoms or phosphorus-containing groups
C08F 8/42	• Introducing metal atoms or metal-containing groups
C08F 8/44	• Preparation of metal salts or ammonium salts
C08F 8/46	• Reaction with unsaturated dicarboxylic acids or anhydrides thereof, e.g. maleinisation
C08F 8/48	• Isomerisation; Cyclisation
C08F 8/50	• Partial depolymerisation

Scope of the last symbol in the Combination set (C08F8)

C08F 8/00

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

Notes

- i** Classification is given in the form of C-Sets when sufficient information is provided concerning the polymer to be modified. In groups C08F8/00 to C08F8/50 , the chemical modification of specific polymers is indicated using the subdivisions of C08F10/00 to C08F34/04 , C08F38/00 to C08F38/04 , C08F110/00 to C08F134/04 , C08F138/00 to C08F138/04 , C08F210/00 to C08F234/04 , C08F238/00 to C08F299/08 . Example: (C08F8/44 , C08F16/06) Otherwise, only the C08F8/00 - C08F8/50 symbol(s) is (are) given.

Guidance & comments

- ❑ The allocation of one or multiple Combination sets is **based on the contribution represented by each and every Example and is mandatory**.

- ❑ In the absence of any Example, and if the claims or the disclosure are directed to one or more chemical modification steps performed on a polymer which can be described by one single last symbol (among the authorized ranges of groups within the subclass C08F), then one or more Combination set(s) comprising said single last symbol is/are allocated.

- ❑ In all other cases, no Combination set(s) is/are allocated, but only one or more single symbol C08F8 symbol(s).

Guidance & comments

- ❑ **C08F8** is never used as a last symbol within a Combination set, and the Combination set is (**INV.**) information

- ❑ The last place rule applies for each symbol used in the Combination sets, unless a special provision applies which takes precedence over the last place rule (e.g. C08F8/08 and C08F8/16 which take precedence over C08F8/48)

- ❑ Reference is further made to the special rules of classification within the group C08F8/00 as specified in the present version of the Definitions (pages 25-28)

Guidance & comments:

- Additional indexing codes which should be allocated as single symbol (**ADD.**) information in the field of chemical modifications by after-treatment (C08F8)

C08F 2800/00	Copolymer characterised by the proportions of the comonomers expressed (not used)
C08F 2800/10	• as molar percentages
C08F 2800/20	• as weight or mass percentages
C08F 2810/00	Chemical modification of a polymer (not used)
C08F 2810/10	• including a reactive processing step which leads, inter alia, to morphological and/or rheological modifications, e.g. visbreaking
C08F 2810/20	• leading to a crosslinking, either explicitly or inherently
C08F 2810/30	• leading to the formation or introduction of aliphatic or alicyclic unsaturated groups
C08F 2810/40	• taking place solely at one end or both ends of the polymer backbone, i.e. not in the side or lateral chains
C08F 2810/50	• wherein the polymer is a copolymer and the modification is taking place only on one or more of the monomers present in minority

Examples for chemical modifications (C08F8):

❑ Example 1: US2014/0100333

➤ Solution: (in view of Combination sets with C08F8 as base symbol and associated indexing codes)

- Combination set: C08F8/48, C08F8/28, C08F16/06 (INV.)

❑ Example 2: US2013/0137834

➤ Solution: (in view of Combination sets with C08F8 as base symbol and associated indexing codes)

- Combination set: C08F8/50, C08F8/06, C08F212/08 (INV.)

& single symbol indexing code:

C08F2810/10 (ADD.)

Recapitulative table for Combination sets with C08F8 as base symbol

Base symbol and further symbol(s) (in case of multistep chemical modifications) selected from:	C08F8/00 to C08F8/50
Chemical modification by after-treatment	
Last symbol selected from:	C08F10/00 to C08F34/04; C08F38/00 to C08F38/04; C08F110/00 to C08F134/04; C08F138/00 to C08F138/04; C08F210/00 to C08F234/04; C08F238/00 to C08F299/08;
Specific polymer treated	
Number of symbols in a valid Combination set:	≥ 2
Combination set is of the type:	INV.
Allocation of Combination set(s) is:	Mandatory
Associated unlinked indexing code(s):	C08F2800/00 (sub-notations); C08F2810/00 (sub-notations)