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Combination sets

General Guidance for the allocation of Combination Sets in the Polymer Field



Outline

- Historical background
- Structure, type and use
- Allocation rules and principles
- Advantages and problems

Structure type and use

- Combination sets are linked symbols separated by a comma (,) which identify a combination of certain technical features
  - Examples of combined technical features:
    - different ingredients within a mixture
    - a compound and its preparation process

- All classification symbols which are linked within a Combination sets must be valid symbols of the CPC scheme.

- As a result of the link between the symbols, Combination setss allow to use special search techniques

Structure type and use

- The first symbol in a Combination sets is called the “**base symbol**”
  - The base symbol determines the "authorization" rights for the allocation/validation or deletion of a Combination sets.
  - The selected base symbol determines whether the combination set as a whole can be flagged as:
    - an "invention information set“ (**INV.**),
    - an "additional information set“ (**ADD.**),
      - ✓ Ex.**:**
      - **C08F210/06, C08F2/001 (INV.)**
      - **C08F210/06, C08F210/08, C08F2500/11 (ADD.)**
      - **C08F2220/1808, C08F220/06 (ADD.) only,** since the base symbol belongs to the “2000” series of symbols

Structure type and use

- Contrary to "single" unlinked symbols, it is allowed to have **duplicate symbols** in a single Combination sets and in different Combination setss pertaining to the same document (i.e., multiple indexing)
  - Ex. of two Combination sets relating to the same document
    - C08L83/04, C08L69/00, C08L83/04 (embodiment 1)
    - C08L83/04, C08L67/02 (embodiment 2)

- In a Combination sets the **order of symbols** is of importance for the meaning expressed thereby; a change of order makes it a different Combination set with possibly a different information
  - Ex. of two Combination sets relating to the same document, but with different meanings
    - C08F220/06, C08F220/14, C08F220/32 (embodiment 1)
    - C08F220/14, C08F220/32, C08F220/06 (embodiment 2)

Structure type and use

- No intelectual limitation as to the number of symbols allowed per Combination set (limitation to 50 symbols in EPO internal tools)

- No limitation as to the number of Combination sets allowed per document

Structure type and use

- The use of Combination sets in a particular subclass is identified in the Notes (sometimes also the Warnings) of the Scheme of said subclass and in the corresponding CPC Definitions of said subclass.
  - Example taken from a Note in the scheme of subclass C04B

Note

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In groups C04B 2/00 to C04B 32/00 and C04B 38/00 to C04B 41/00 it is desirable to classify the individual constituents of the mixtures, or other aspects relating to the mixtures or constituents, using Combination Sets with symbols chosen from groups C04B 2/00 to C04B 41/00.

Structure type and use

- Combination sets are used in a relatively limited number of technical fields of the CPC, but have been allocated to a substantial amount of documents in the polymer field
  - about 5.7 % of the overall CPC classified documents have at least one Combination set assigned thereto
  - In the polymer subclasses, this percentage raises to roughly **52%** of the documents

Structure type and use

- The polymer field comprises Combination sets with **base symbols** selected from six subclasses

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
C08K	USE OF INORGANIC OR NON-MACROMOLECULAR ORGANIC SUBSTANCES AS COMPOUNDING INGREDIENTS
C08L	COMPOSITIONS OF MACROMOLECULAR COMPOUNDS
C09D	COATING COMPOSITIONS, e.g. PAINTS, VARNISHES OR LACQUERS; FILLING PASTES; CHEMICAL PAINT OR INK REMOVERS; INKS; CORRECTING FLUIDS; WOODSTAINS; PASTES OR SOLIDS FOR COLOURING OR PRINTING; USE OF MATERIALS THEREFOR
C09J	ADHESIVES; NON-MECHANICAL ASPECTS OF ADHESIVE PROCESSES IN GENERAL; ADHESIVE PROCESSES NOT PROVIDED FOR ELSEWHERE; USE OF MATERIALS AS ADHESIVES

Structure type and use

- Combination sets in the polymer field include 2 or more valid CPC symbols.

- Authorized Combination sets in the polymer field allow to combine either:
  - symbols selected from the same subclass,
    - symbols selected within the same main group,

  - symbols selected from two distinct subclasses or

  - symbols selected from three distinct subclasses

- In the polymer field, the combination of symbols within Combination sets, allows to link information relating to different technical features and this is most valuable for later search purposes

Structure type and use

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

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in subclass C08F:

- **Post-polymerization treatment** (base symbol: C08F6) applied to **specific polymers** (identified by a second symbol of the C08L type)
  - Two symbols only are linked.
  - Ex.:
    - Combination Set: C08F6/18, C08L27/12

- **Chemical modification(s) by after-treatment** (base symbol C08F8; all further symbols except the last one: C08F8 as well) applied to **specific polymers** (identified by a last symbol of the C08F type)
  - Two **or more** symbols are linked.
  - Ex.:
    - Combination Set: C08F8/14, C08F8/46, C08F110/10

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in subclass C08F:

- **Polymer** (base symbol starting from C08F10 and including some further specific groups in the hierarchy of subclass C08F) linked to the **process of polymerization thereof** (second symbol: C08F2)
  - Two symbols only are linked.
  - Ex.:
    - Combination Set: C08F10/02, C08F2/34

- **Polymer** (base symbol starting from C08F10 and including some further specific groups in the hierarchy of subclass C08F) linked to the **catalyst for the preparation thereof** (second symbol: C08F4)
  - Two symbols only are linked.
  - Ex.:
    - Combination Set: C08F110/10, C08F4/06

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in subclass C08F:

- **Polymer backbone** (base symbol selected from the range: C08F251 to C08F292) **grafted or crosslinked with unsaturated monomers** (second symbol select from the range: C08F210 to C08F238)

  - Two symbols only are linked.
  - Ex.:
    - Combination Set: C08F255/10, C08F222/06

Structure type and use

Overview: (**ADD.**) Combination sets with base symbols in main group C08F110:

- **Homopolymer** with the base symbol C08F110 linked to **properties and/or use features** thereof (second and further symbols belonging to subgroups of C08F2500)

  - Two **or more** symbols are linked.
  - Ex.:
    - Combination Set: C08F110/08, C08F2500/13, C08F2500/18, C08F2500/26

Structure type and use

Overview: (**ADD.**) Combination sets with base symbols in main group C08F210:

- **Copolymer** with the **comonomer in majority** being C08F210 linked to the symbol(s) corresponding to the **comonomer(s) in minority** therein (second and possible further symbol(s) selected from the range C08F210 to C08F238) and, optionally, to **characteristics, properties or use of said copolymer** if applicable [last symbol(s) after the symbol(s) relating to the nature of the comomer(s) are selected from symbols belonging to subgroups of C08F2500]

  - Two **or more** symbols are linked.
  - Ex.:
    - Combination Set: C08F210/06, C08F210/14, C08F2500/09, C08F2500/21

Structure type and use

Overview: (**ADD.**) Combination sets with base symbols in subclass C08F:

- **Copolymer** (base symbol corresponding to the **comonomer in majority** within the copolymer and to be selected from: C08F212 to C08F238) linked to the **comonomer(s) in minority** therein (further symbol(s) selected from the range C08F210 to C08F238)

  - Two **or more** symbols are linked.
  - Ex.:
    - Combination Set: C08F212/08, C08F220/14, C08F212/36

Structure type and use

C08G	MACROMOLECULAR COMPOUNDS OBTAINED OTHERWISE THAN BY REACTIONS ONLY INVOLVING UNSATURATED CARBON-TO-CARBON BONDS

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in main group C08G18:

- Prepolymer processes prepared **from a first reaction step** (base symbol selected from C08G18/10 or C08G18/12) linked to the **reactive components of a second or following step** (second symbol selected among a specific subset of subgroups belonging to the main group C08G18)
  - Two symbols only are linked.
  - Ex.:
    - Combination Set: C08G18/12, C08G18/38

- Prepolymer processes prepared **from a first reaction step** (base symbol selected from C08G18/10 or C08G18/12) linked to the **oligomerisation of iso(thio)cyanate groups in the prepolymers or in subsequently added reactive components** (second symbol selected among a specific subset of subgroups belonging to the main group C08G18)
  - Two symbols only are linked.
  - Ex.:
    - Combination Set: C08G18/10, C08G18/022

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in main group C08G18:

- **Unsaturated compounds having active hydrogen** (base symbol selected from C08G18/67, C08G18/671 to C08G18/672, C08G18/6735 to C08G18/679) used in the **manufacture of polymers containing ionic or ionogenic groups** (second symbol selected among a specific subset of subgroups belonging to the main group C08G18)
  - Two symbols only are linked.
  - Ex.:
    - Combination Set: C08G18/679, C08G18/0823

- **Unsaturated compounds having only one group containing active hydrogen** (base symbol selected from C08G18/671 to C08G18/672) linked to **polymer-backbone forming high-molecular-weight compounds containing active hydrogen or their combination with low-molecular-weight compounds** (second symbol selected among a specific subset of subgroups belonging to the main group C08G18)
  - Two symbols only are linked.
  - Ex.:
    - Combination Set: C08G18/671, C08G18/40

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in main group C08G18:

- **Unsaturated isocyanates or isothiocyanates** (base symbol selected from C08G18/81 to C08G18/8191) used in the **manufacture of polymers containing ionic or ionogenic groups** (second symbol selected among a specific subset of subgroups belonging to the main group C08G18)
  - Two symbols only are linked.
  - Ex.:
    - Combination Set: C08G18/8125, C08G18/0828

- **Polyisocyanates or polyisothiocyanates masked with unsaturated compounds having only one group containing active hydrogen** (base symbol selected from C08G 18/8158 to C08G 18/8175) linked to **polymer-backbone forming high-molecular-weight compounds containing active hydrogen or their combination with low-molecular-weight compounds** (second symbol selected among a specific subset of subgroups belonging to the main group C08G18)
  - Two symbols only are linked.
  - Ex.:
    - Combination Set: C08G18/8158, C08G18/6795

Structure type and use

C08K	USE OF INORGANIC OR NON-MACROMOLECULAR ORGANIC SUBSTANCES AS COMPOUNDING INGREDIENTS

Structure type and use: main groups in C08K

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)	
C08K 3/00	**Use of inorganic ingredients**	D
C08K 5/00	**Use of organic ingredients**	D
C08K 7/00	**Use of ingredients characterised by shape**	D
C08K 9/00	**Use of pretreated ingredients**	D
C08K 11/00	**Use of ingredients of unknown constitution, e.g. undefined reaction products**	D
C08K 13/00	**Use of mixtures of ingredients not covered by one single of the preceding main groups, each of these compounds being essential**	D

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in subclass C08K:

- **A compounding ingredient** (base symbol selected from the subclass C08K) compounded **with a single specific polymer** (second symbol selected from the range C08L1/00 to C08L99/00)

  - Two symbols only are linked.
  - Ex.:
    - Combination Set: C08K5/14, C08L23/06

Structure type and use

C08L	COMPOSITIONS OF MACROMOLECULAR COMPOUNDS

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in subclass C08L:

- **A composition comprising a polymer in majority** (base symbol selected from any group within the subclass C08L) and one or more **polymer(s) in minority** (second and further symbol(s), if any, are selected from group(s) within the subclass C08L)
  - Two or more symbols are linked.
  - Ex.:
    - Combination Set: C08L69/00, C08L67/02, C08L9/00

- **A composition comprising a polymer in majority** (base symbol selected from any group within the subclass C08L) and one or more **polymer(s) in minority** (second and further symbol(s), if any, are selected from group(s) within the subclass C08L) and **one or more further compounding ingredient** in the sense of subclass C08K (symbol(s), positioned after the last C08L symbol in the Combination set, selected from group(s) of the subclass C08K)
  - Three or more symbols are linked.
  - Ex.:
    - Combination Set: C08L83/04, C08L83/12, C08K5/17, C08K7/20

Structure type and use

C09D	COATING COMPOSITIONS, e.g. PAINTS, VARNISHES OR LACQUERS; FILLING PASTES; CHEMICAL PAINT OR INK REMOVERS; INKS; CORRECTING FLUIDS; WOODSTAINS; PASTES OR SOLIDS FOR COLOURING OR PRINTING; USE OF MATERIALS THEREFOR

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in subclass C09D:

- **A coating composition comprising a polymer in majority** (base symbol group selected within the range of C09D101/00 to C09D201/10) and one or more **polymer(s) in minority** (second and further symbol(s), if any, are selected from group(s) within the subclass C08L)
  - Two or more symbols are linked.
  - Ex.:
    - Combination Set: C09D123/02, C08L25/06, C08L29/08

- **A coating composition comprising a polymer in majority** (base symbol group selected within the range of C09D101/00 to C09D201/10) and one or more **polymer(s) in minority** (second and further symbol(s), if any, are selected from group(s) within the subclass C08L) and **one or more further compounding ingredient** in the sense of subclass C08K (symbol(s), positioned after the last C08L symbol in the Combination set, selected from group(s) of the subclass C08K)
  - Three or more symbols are linked.
  - Ex.:
    - Combination Set: C09D127/06, C08L77/02, C08K7/22, C08K9/10

Structure type and use:

❑ **Special case of main group C09D4**

C09D 4/00	**Coating compositions, e.g. paints, varnishes or lacquers, based on organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond;** { Coating compositions, based on monomers of macromolecular compounds of groups **C09D 183/00** to **C09D 183/16** }
C09D 4/06	• {Organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond} in combination with a macromolecular compound other than an unsaturated polymer of groups **C09D 159/00** to **C09D 187/00**

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in main group C09D4/00:

- **Coating compositions, e.g. paints, varnishes or lacquers** (base symbol is C09D4/00), based on **organic non-macromolecular compounds having at least one polymerizable carbon-to-carbon unsaturated bond or oligomers thereof** (second symbol is selected from the range of groups C08F210/00 to C08F246/00, C08G77/00 to C08G77/04 and C08G77/20 to C08G77/30)

  - Two symbols only are linked.
  - Exs.:
    - Combination Set: C09D4/00, C08F220/14
    - Combination Set: C09D4/00, C08G77/04

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in subgroup C09D4/06:

- **Coating compositions, e.g. paints, varnishes or lacquers** (base symbol is C09D4/06), based on **organic non-macromolecular compounds having at least one polymerizable carbon-to-carbon unsaturated bond or oligomers thereof in combination with a macromolecular compound** other than an unsaturated polymer of groups C09D159/00 to C09D187/00 (second symbol is selected from the range of groups C08F251/00 to C08F289/00, C08F290/00 to C08F290/048, C08F290/08 to C08F290/128, C08F291/00 and sub-notations thereof)

  - Two symbols only are linked.
  - Exs.:
    - Combination Set: C09D4/06, C08F259/04

Structure type and use

C09J	ADHESIVES; NON-MECHANICAL ASPECTS OF ADHESIVE PROCESSES IN GENERAL; ADHESIVE PROCESSES NOT PROVIDED FOR ELSEWHERE; USE OF MATERIALS AS ADHESIVES

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in subclass C09J:

- **Adhesives based on a polymer in majority** (base symbol group selected within the range of C09J101/00 to C09J201/10) and one or more **polymer(s) in minority** (second and further symbol(s), if any, are selected from group(s) within the subclass C08L)
  - Two or more symbols are linked.
  - Ex.:
    - Combination Set: C09J155/02, C08L25/08, C08L27/06

- **Adhesives based on a polymer in majority** (base symbol group selected within the range of C09J101/00 to C09J201/10) and one or more **polymer(s) in minority** (second and further symbol(s), if any, are selected from group(s) within the subclass C08L) and **one or more further compounding ingredient** in the sense of subclass C08K (symbol(s), positioned after the last C08L symbol in the Combination set, selected from group(s) of the subclass C08K)
  - Three or more symbols are linked.
  - Ex.:
    - Combination Set: C09J133/04, C08L75/02, C08K3/36, C08K5/02

Structure type and use:

- **Special case of main group C09J4**

C09J 4/00	**Adhesives based on organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond;** { adhesives, based on monomers of macromolecular compounds of groups C09J 183/00 to C09J 183/16 }
C09J 4/06	└• {Organic non-macromolecular compounds having at least one polymerisable carbon-to-carbon unsaturated bond} in combination with a macromolecular compound other than an unsaturated polymer of groups C09J 159/00 to C09J 187/00

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in main group C09J4/00:

- **Adhesives** (base symbol is C09J4/00), based on **organic non-macromolecular compounds having at least one polymerizable carbon-to-carbon unsaturated bond or oligomers thereof** (second symbol is selected from the range of groups C08F210/00 to C08F246/00, C08G77/00 to C08G77/04 and C08G77/20 to C08G77/30)

  - Two symbols only are linked.
  - Exs.:
    - Combination Set: C09J4/00, C08F236/06
    - Combination Set: C09J4/00, C08G77/20

Structure type and use

Overview: (**INV.**) Combination sets with base symbols in subgroup C09J4/06:

- **Adhesives** (base symbol is C09J4/06), based on **organic non-macromolecular compounds having at least one polymerizable carbon-to-carbon unsaturated bond or oligomers thereof in combination with a macromolecular compound** other than an unsaturated polymer of groups C09J159/00 to C09J187/00 (second symbol is selected from the range of groups C08F251/00 to C08F289/00, C08F290/00 to C08F290/048, C08F290/08 to C08F290/128, C08F291/00 and sub-notations thereof)

  - Two symbols only are linked.
  - Exs.:
    - Combination Set: C09J4/06, C08F265/10

Allocation rules and principles

❑ General guidance for allocating Combination sets in the polymer field

➢ In the document to be classified, **identify** (on the basis of the claims, examples and description) the **features** to be classified such as:

- Product(s),
- Process(es) including any particular catalyst(s) used (if relevant),
- Composition(s),
- Use(s) and
- Special properties and/or characteristics and/or further aspects

➢ For each of the above features **identify** the corresponding **subclass(es)** and then the **subgroup(s)** concerned (on the basis of the specific classification rules provided in the Definitions and Scheme concerned)

Allocation rules and principles

- Identify the features which are **linked** in the document (especially the linked features of embodiments such as those specified in the Examples) and to which **Combination sets can be assigned**

- Apply the (general/special) **rules** applicable to each individual symbol within the Combination set (e.g., the so called “last place rule” unless a derogation to said rule is applicable)

Allocation rules and principles

- Determine whether the identified Combination set has to be allocated as **INV**. or **ADD**. information and **finalize** the Combination set allocation

- Allocate **further** relevant **unlinked symbols** such as INV. type or ADD. type symbols, according to the relevant specific rules of the field(s) concerned

Advantages

- Combination sets **unambiguously** identify features disclosed in the same context within a document
  - thereby, they allow an increase of the **signal/noise** ratio during Combination set specific searches in comparison to the Boolean searches applied to unlinked or linked classification symbols

- Allow to **classify linked features for which no separate single subgroup exists** within a subclass of the CPC

- Allow to **circumvent some drawbacks associated to keyword based searches**, e.g., in view of the reduction of the noise generated by the use of the same terminology in different technical contexts

Advantages

- Flexibility during the search, since a search can be either **highly specific** therewith or **easily broadened** with the help of hierarchical operators

- Combination sets represent a **dynamic indexing system** which can avoid the creation of further indentations of the CPC scheme