SAMSUNG-1049
Samsung v. Headwater
IPR2025-00932

Application of Cooperative Patent Classification (CPC) in biotechnology areas

UNITED STATES
PATENT AND TRADEMARK OFFICE
uspto

Objectives

- **Brief background on CPC**
- **Overview of CPC scheme and list of biotechnology classes/subclasses**
- **CPC classification**
- **Searching using CPC**
  - General searching techniques
  - Combination set classification/searching

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Overview of CPC

- **CPC is jointly owned and maintained by the USPTO and the European Patent Office (EPO)**
- **CPC is based on the International Patent Classification (IPC) with greater numbers of breakdowns**
- **USPTO transitioned to CPC during 2013-2014 and the United States Patent Classification (USPC) became static in 2015**
- **CPC is now used by more than 45 patent offices worldwide and being adopted by additional Offices**
- **CPC is continuously revised through USPTO and EPO collaborations**
  - Updates in IPC are incorporated in CPC

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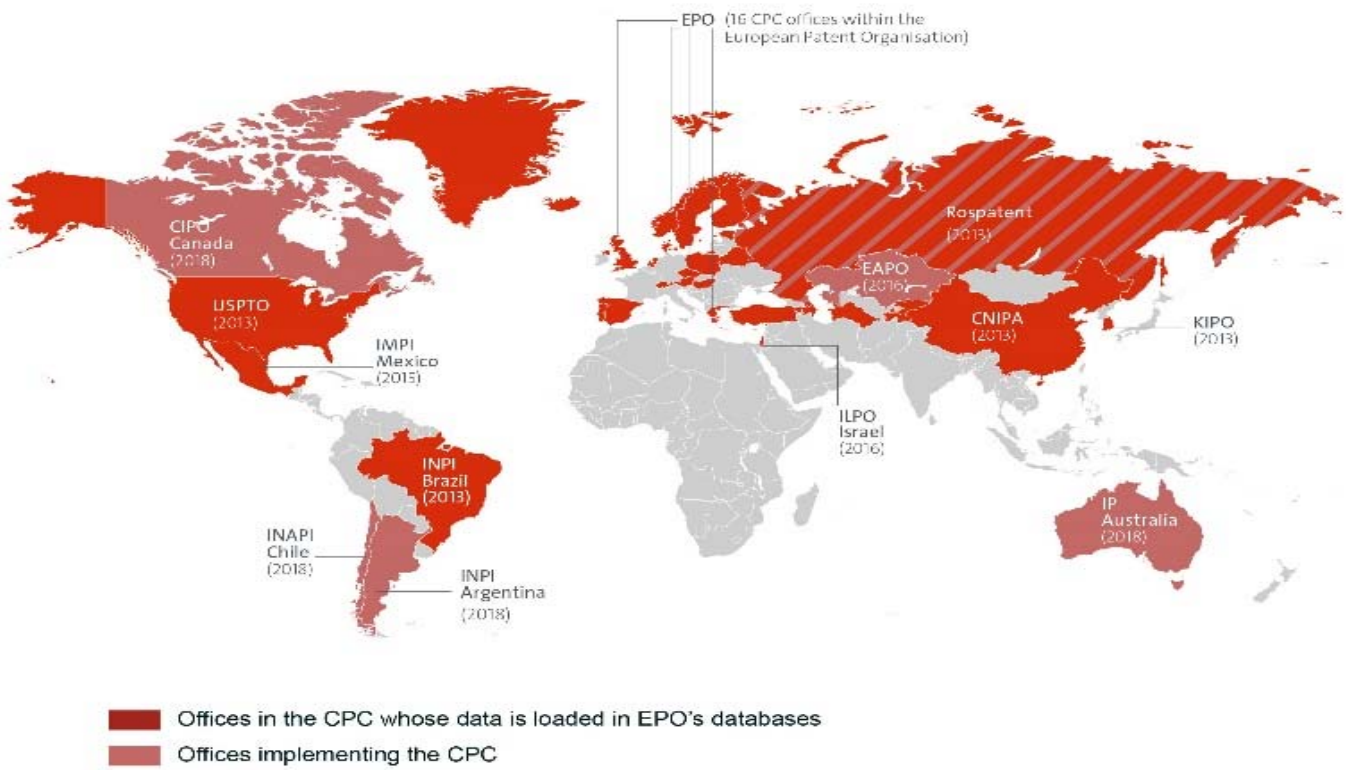
CPC and national offices



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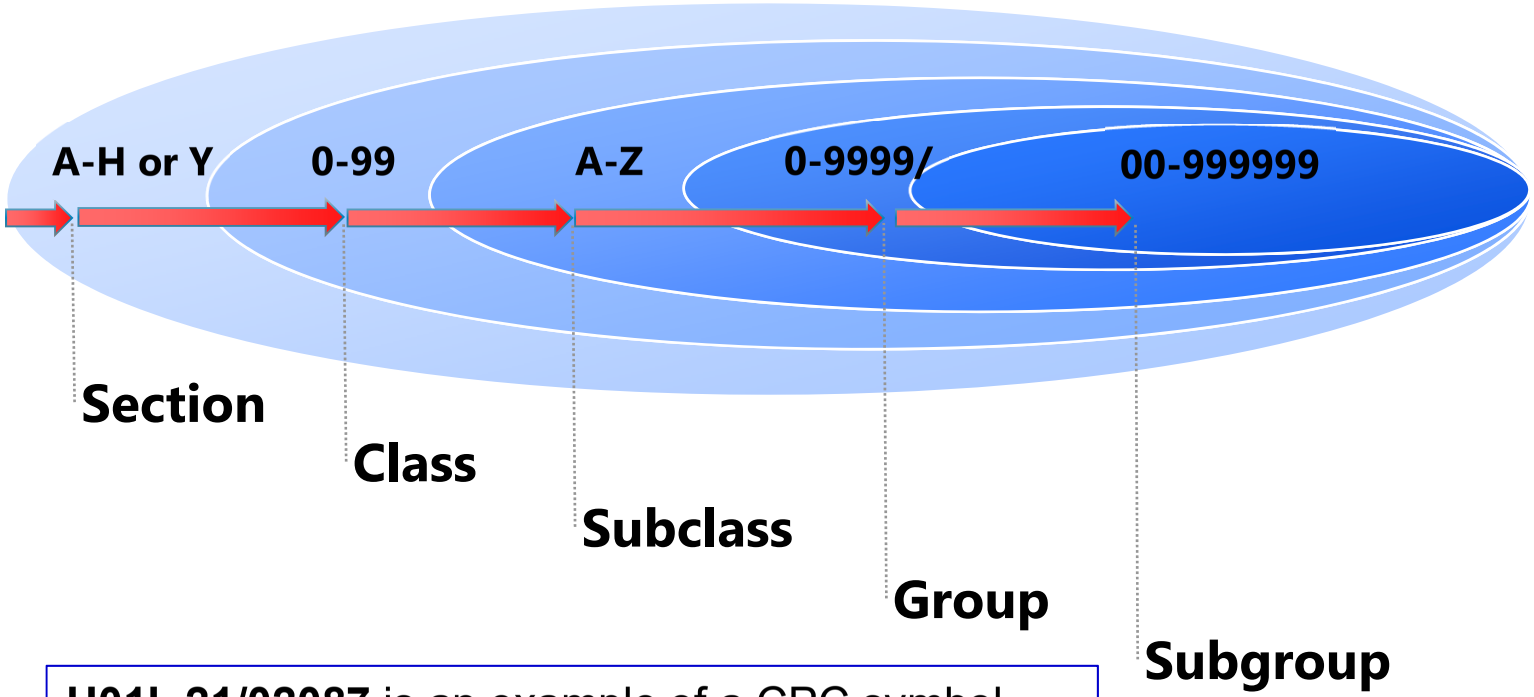
The CPC symbol



H01L 21/02087 is an example of a CPC symbol

H01L is the subclass identifier

H01 is the class

H is the section

Titles, References, Definitions, Notes and Warnings

Hyperlinked Definition ⊟ H02I

Title

References

NOTE

WARNING

TITLE DEFINES SCOPE OF SUBJECT MATTER; SEMICOLON INTERPRETED AS 'OR' FOR MULTI-PART TITLE {CPC title not present in IPC has green curly brackets} (REFERENCES are statements enclosed in parentheses, pointing to other classification places that may be of interest. References may exclude specified subject matter from the scope of a classification place and may indicate another place that takes precedence. Further references may indicate the location of similar subject matter that could be of interest for search.)

NOTE

Notes are supplementary statements that follow a CPC place and may provide the following functions:

1. Explain scope:
   This group does not cover broadcast communication, which is covered by subclass H04H.

2. Define terminology:
   In this subclass, the following terms or expressions are used with the meanings indicated: "metallic powder" covers powders containing a substantial proper of non-metallic material.

3. Indicate Classification Rules:
   In this subclass, group G01R 17/00 takes precedence over groups G01R 19/00-G01R 31/00.

WARNING

A warning signals deviations from IPC or incomplete classification

Titles, References, Definitions, Notes and Warnings defines hierarchically lower groups

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CPC scheme

Sections	Subject Matter
A	**Human necessity**
B	**Performing operation; transporting**
C	**Chemistry; metallurgy**
D	Textiles; paper
E	Fixed constructions
F	Mechanical engineering; lighting; heating; weapons; blasting
G	**Physics**
H	Electricity
Y	General tagging of new technological developments

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Biotechnology areas in CPC

Section	Subclass	Subject Matter
A: Human Necessity	**A01G**	Horticulture plants
	A01H	New plants or processes for obtaining them; plant reproduction by tissue culture techniques
	A61K	Preparations for medical, dental, or toilet purposes
	A61P	Specific therapeutic activity of chemical compounds or medicinal preparations
	A61Q	Specific use of cosmetics or similar toilet preparations

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Biotechnology areas in CPC

Section	Subclass	Subject Matter
B: Performing operation; Transporting	**B01F**	Mixing, e.g. dissolving, emulsifying, dispersing
	B01J	Chemical or physical processes, e.g. catalysis or colloid chemistry; their relevant apparatus
	B81B	Microstructural devices or systems, e.g. micromechanical devices
	B82B	Nanostructures formed by manipulation of individual atoms, molecules, or limited collections of atoms or molecules as discrete units; manufacture or treatment thereof
	B82Y	Specific uses or applications of nanostructures; measurement or analysis of nanostructures; manufacture or treatment of nanostructures

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Biotechnology areas in CPC

Section	Class	Subject Matter
C: Chemistry; Metallurgy	**C05**	Fertilizers; manufacture thereof
	C07	Organic chemistry
	C08	Organic macromolecular compounds; their preparation or chemical working-up; compositions based thereon
	C09	Dyes (organic and inorganic); paints; natural resins; adhesives…
	C11	Animal and vegetable oils, fats, fatty substances and waxes; fatty acids therefrom; detergents; candles

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Biotechnology areas in CPC

Section	Class	Subject Matter
C: Chemistry; Metallurgy	**C12**	Biochemistry; beer; spirits; wine; vinegar; microbiology; enzymology; mutation or genetic engineering **C12N**: Microorganisms or enzymes; compositions thereof… (e.g. CRISPR: C12N2310/20) **C12Q**: measuring or testing processes involving enzymes, nucleic acids or microorganism; compositions…
	C13	Sugar industry
	C25	Electrolytic or electrophoretic processes; apparatus therefor
	C40	Combinatorial chemistry

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Biotechnology areas in CPC

Section	Subclass	Subject Matter
G: PHYSICS	**G01N**	Investigating or analysing materials by determining their chemical or physical properties
	G16H	Healthcare informatics, i.e. Information and communication technology [ICT] specially adapted for the handling or processing of medical or healthcare data

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CPC classification principles and rules

- Classification is done at the family level
  - All documents in the entire family (including all foreign documents) are classified with the same symbols
- Classification in CPC is based on the whole disclosure, including the abstract, specification, drawings and claims
- Classification rules: definition for each class/subclass sets out the rules
  - Common rule: the default classification rule in all CPC areas; allocate subgroups with the most complex and specialized subject matter
  - Last Place Priority Rule (LPPR): classification is made in the last appropriate place
  - First Place Priority Rule (FPPR): classification is made in the first appropriate place
- Allocating CPC subgroups as either “inventive” or “additional” (2000 indexing subgroups can only be additional)

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How to search using CPC?

Major classification searchable indices:

Searchable Index	Search Label	Example	Notes
Current CPC Additional	CPCA	A61K2039/5252.CPCA.	Exclude leading zeros
Current CPC Classification	CPC	C12N7/00.CPC. C07C51/43-64.CPC.	-Exclude leading zeros -Searches CPCI, CPCA, and CPCT -Range searching at the subgroup level
Current CPC Inventive	CPCI	C12N7/00.CPCI.	Exclude leading zeros
Current CPC Subclass	CPCL	C12N.CPCL.	
Current CPC Subclass Additional	CPLA	C07C.CPLA.	
Current CPC Subclass Inventive	CPLI	C07C.CPLI.	
Current IPC Class	CICL	H04N.CICL.	2006 and newer
Current IPC, Primary and Secondary	IPCR	G06F17/??.IPCR.	2006 and newer, no zero padding
Current CPC Combination Set	CPCC	("1" ADJ C07C51/43).CPCC.	Searches the ranks and CPC classifications of a CPC combination set
Current CPC Combination Set Classification	CCCC	("1" ADJ2 A61K).CCCC. (A61K SAME (L ADJ I)).CCCC.	Searches all data for a single CPC combination set classification

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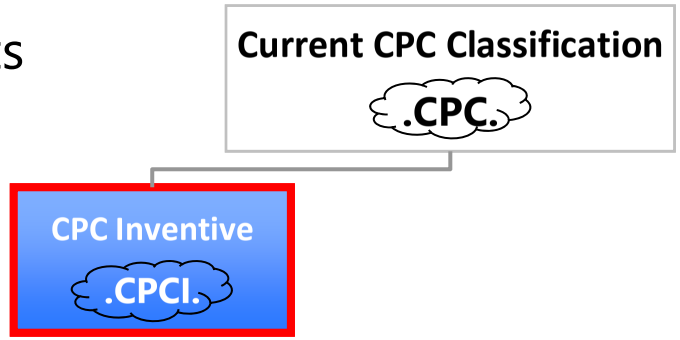
Inventive type

Inventive Type or **"I"**

- The technical information that represents an addition to the state of the art
- Mandatory to classify inventive information
- There can be multiple **"I"** Symbols in a Classification Picture



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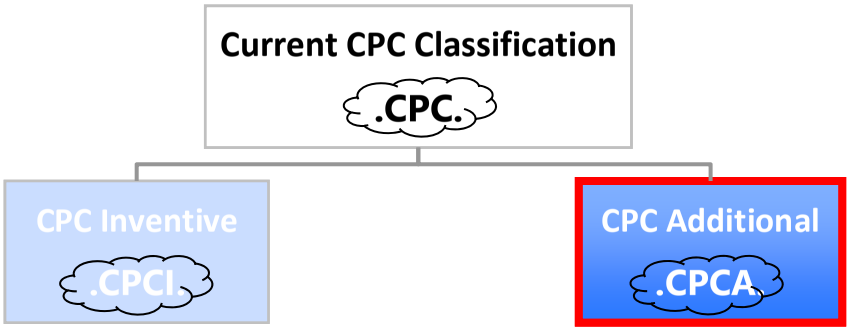
Additional type

Additional type or **"A"**

- Non-trivial technical information which does not in itself represent an addition to the state of the art but might constitute useful information for the searcher



- Classified on a discretionary basis, except for mandatory indexing codes
- There can be multiple **"A"** Symbols in a classification picture

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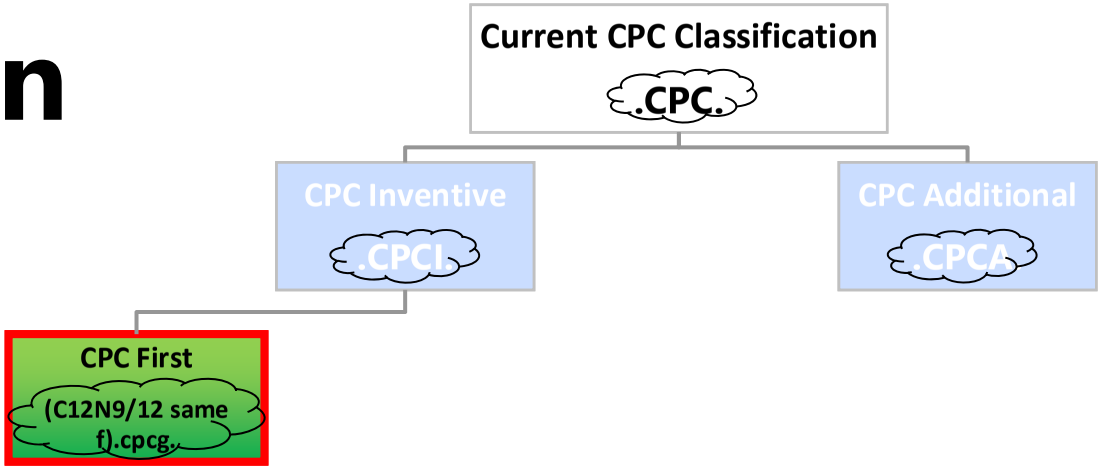
First position



- Identifies the Symbol which will be listed **first** on the face of each published document
- Most adequately represents the invention as a whole for the classification allocation.
- There can be only <u>one</u> **"F"** symbol in a classification picture.
- When a later-published Family Member possesses a different **first** symbol, the later-published **first** will override the previous **first** for the entire patent family, the overridden first symbol is retained as an inventive symbol.

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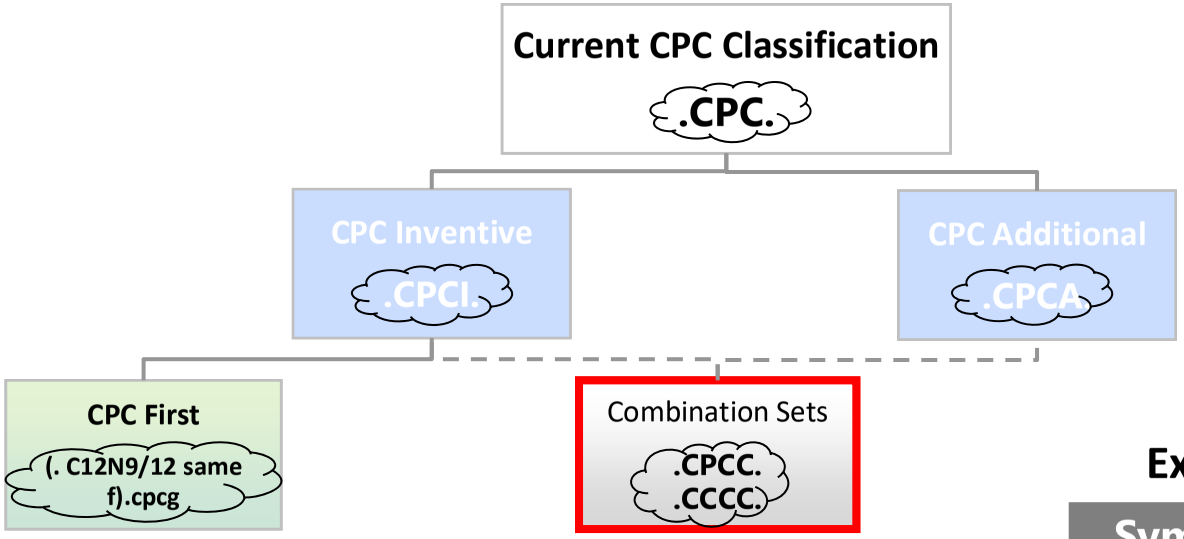
Combination sets



Example Combination Set

Symbol	Type	Set	Rank
C08L 51/04	I	1	1
C08L 2666/02	A	1	2

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What are combination sets?

- **Combination sets are linked symbols separated by a comma (,) that 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 set must be valid symbols of the CPC scheme**
- **Each symbol in a combination set has a defined relationship to the other symbols in its combination set**
- **The relationship is represented by the order of the symbols in each combination set**
- **As a result of the link between the symbols, combination sets allow use of special search techniques**
- **Combination sets are also known as combination-sets or combi sets or c-sets**

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What are combination sets?

- Usage of combination sets in a field is clearly identified in the notes in the CPC Scheme and/or from the definitions
  - Usage is **OPTIONAL** unless stated as “mandatory” in the definitions
  - A limited number of areas make official use of the technique
- Only certain CPC areas have allowed combi-sets;
  - See “Guide to the CPC” for a list of technical areas where combination sets are used
    - For example: A01N area or C07C area

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Selected listing of allowed c-sets areas

ANNEX III. LIST OF TECHNICAL AREAS USING C-SETS (November 2017)

The following table summarises the technical areas where allocation of C-Sets is authorised.

	Subclass	Base symbols	Subsequent symbol(s)
1	A01N	A01N25/00-A01N65/48	A01N25/00-A01N65/48, A01N2300/00
2	A23G	A23G1/305, A23G1/56, A23G3/343, A23G3/346, A23G4/062, A23G9/322, A23G9/52	A23G2200/00-A23G2220/22
3	A23V	A23V2002/00	A23V2200/00-A23V2300/50, A23Y2220/00-A23Y2320/39
4	A61K	A61K6/00-A61K6/0044, A61K6/08-A61K6/10	C08L1/00-C08L101/16 (excluding breakdown codes, e.g. C08L2023/40)
	A61K	A61K31/00-A61K41/0095 (excluding breakdown codes, e.g. A61K2039/505)	A61K2300/00
5	A61L	A61L15/12, A61L15/125, A61L15/22-A61L15/325, A61L15/58- A61L15/60, A61L17/10, A61L17/105, A61L17/145, A61L24/0073-A61L24/0094, A61L24/043-A61L24/10, A61L24/108, A61L26/0014-A61L26/0028, A61L26/0047, A61L26/0052, A61L26/008, A61L26/0095, A61L27/16-A61L27/22, A61L27/227, A61L27/26, A61L27/34, A61L27/44- A61L27/48, A61L27/52, A61L28/0011-A61L28/0026, A61L28/0049, A61L28/0069, A61L28/008-A61L28/0096, A61L29/041-A61L29/044, A61L29/048-A61L29/06, A61L29/085, A61L29/126, A61L29/145, A61L31/041-A61L31/043, A61L31/047- A61L31/06, A61L31/10, A61L31/125-A61L31/129, A61L31/145, A61L33/0017- A61L33/0035, A61L33/062-A61L33/12, A61L33/128	C08L1/00-C08L101/16 (excluding breakdown codes, e.g. C08L2023/40)

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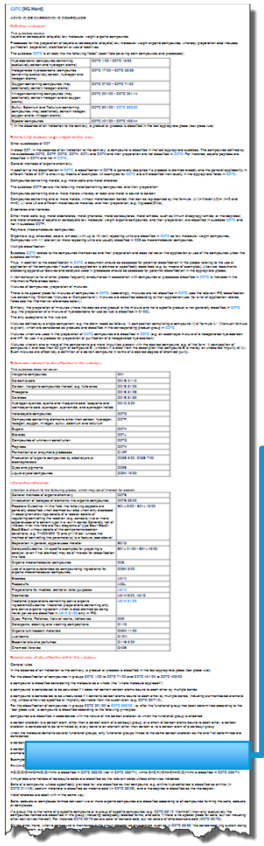
Selected listing of allowed c-sets areas

23	C08K	C08K3/00-C08K13/08 (excluding breakdown codes, e.g. C08K2003/385)	C08L1/00-C08L101/16 (excluding breakdown codes, e.g. C08L2023/40)
24	C08L	C08L1/00-C08L101/16 (excluding breakdown codes, e.g. C08L2023/40)	C08L1/00-C08L101/16 (excluding breakdown codes, e.g. C08L2023/40)
25	C09D	C09D4/00	C08F210/00-C08F246/00 excluding breakdown codes, e.g. C08F2220/286)
	C09D	C09D4/06	C08F251/00-C08F290/048
	C09D	C09D101/00-C09D201/10	C08K3/00-C08K13/08 (excluding breakdown codes, e.g. C08K2003/385), C08L1/00-C08L101/16 (excluding breakdown codes, e.g. C08L2023/40)

Examples of areas that use combi sets

- **Combination sets commonly linked:**
  - The reagent and product and/or method steps
    - Common in C07C (acyclic/carbocyclic compounds), C12N (DNA/RNA, vectors)
  - Polymer blends
  - Monomers within copolymers
  - Cement mixtures
    - Often contains a combi set between different classes (i.e.: compositions for dental impressions often contain a combination set between A61K 6/XX and C08L XX/XX)
  - Mixtures of pesticides (A01N)
  - Filtration techniques/processes
  - Mixtures of pharmaceutically active ingredients
    - Combination sets are relatively generic (i.e.: A61K 31/XX, A61K 2300/00)

Combination set example: process, product



C07C

ACYCLIC OR CARBOCYCLIC COMPOUNDS

Special rules of classification within this group

……

When a process is classified in a process group, combination sets are used to indicate the product of the process. A combination set consists of a process group, followed by and linked to the group of the product. The products are selected from the corresponding product groups (which means that product groups as such (not in form of a combination set) are only used for classifying compounds which are claimed as novel).

Example: Preparation of ethylene by conversion of oxygenates (e.g. methanol, dimethyl ether)

- Process
  C07C1/20 . starting from organic compounds containing only oxygen atoms as heteroatoms
- Product
  C07C11/04 . . Ethylene
- Combination Set (process, product): **(C07C1/20 adj2 C07C11/04).cpcc.**

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Example: A61K combination sets

- In this class, the rule for combination set requires the combination to contain symbol for one active and the mixture indexing code A61K 2300/00
- Example of a multivitamin comprising vitamins A, E, C and B6
  - Vitamin A A61K 31/07
  - Vitamin E A61K 31/355
  - Vitamin C A61K 31/375
  - Vitamin B6 31/4415
- Combination sets:
  - A61K 31/07, A61K 2300/00
  - A61K 31/355, A61K 2300/00
  - A61K 31/375, A61K 2300/00
  - A61K 31/4415, A61K 2300/00

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Classification search comparison

Without combination set:

```
Active
  L1: (4,983) C08L69/00.cpc.
  L2: (2,724) C08L51/04.cpc.
  L3: (702) 1 and 2
```

With combination set:

```
Active
  L1: (4,228) C08L69/00.cpcc.
  L2: (1,920) C08L51/04.cpcc.
  L3: (367) 1 and 2
  L4: (109) 1 same 2
  L5: (105) 1 near6 2
  L6: (63) 1 near2 2
  L7: (49) 1 adj2 2
```


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Benefits of combination sets

- Indicate features, properties, uses or components in combination
- Indicate the role played by a specific feature, property, use or component
- Indicate alternative embodiments
- Help narrow search results by enabling classification search on a specific embodiment
- Allows for more pinpointed searches
- A combination set search will result in only those documents where the combination of symbols that are found linked together in one embodiment

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Classification resources

- USPTO "Search Patent Classification Systems:" searching CPC scheme
- USPTO "Search for Patents:" searching US Patent documents
- CPCinfo.org: USPTO and EPO joint CPC site (contains CPC scheme/definition; Training material; CPC revision; etc)
- Espacenet: EPO classification searching site

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Questions?

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Thank you!

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