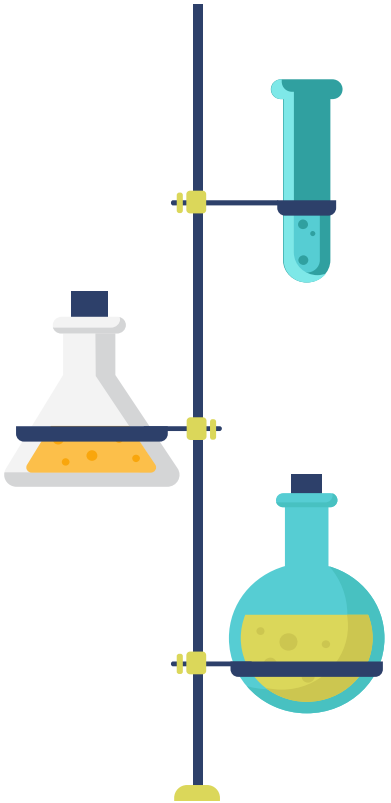
Patent Examiner Training Materials for Chemistry Invention

Clarity & Supported by the Description, Novelty and Inventive Step

Outline

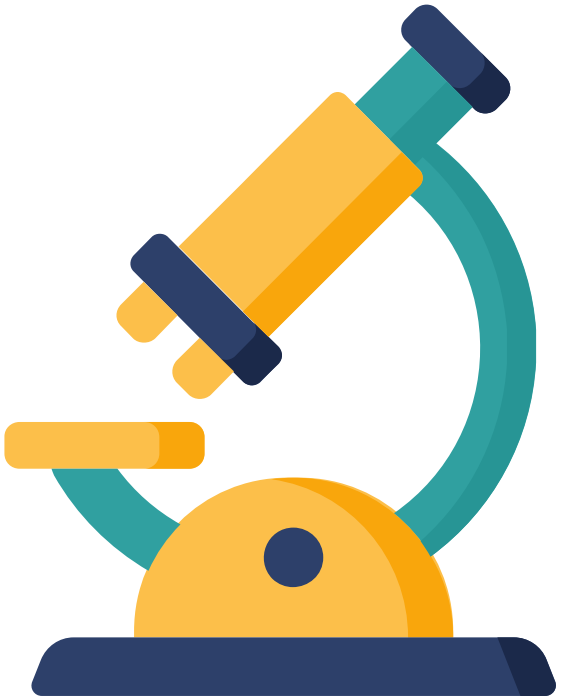


Clarity and Supported by the Description

Novelty

Inventive Step

Clarity and Supported by the Description



Requirements for Claims

- The scope of a patent rights for an invention is determined by the claims, that is, the claims shall define the claimed invention. The claims may comprise one or more claims, each claim shall be recited with clarity and conciseness, and be supported by the description. In the following, some unclear examples recorded in the examination guidelines will be listed for you.
- **Unclear Category**
  - The scope of each claim should be clear and consistent with the claimed subject matter. Examples of unclear claim category may include, for example: the claim recites "a method or device, comprising..." or "a method and device, comprising...;" or when it is impossible to determine whether the claim refers to a product or a method, for example: "an anti inflammatory effect of chemical substance X;" or the claim refers to two or more categories, for example: "the artificial heart as recited in claim 1 or the method of manufacturing artificial heart as recited in claim 2."

Requirements for Claims

- **Technical Feature that defines the invention is Unclear**
  - For a composition defined by a close-ended type transitional phrase, the sum of the upper limit value of a certain component of the composition and the lower limit values of other components exceeds 100%, e.g., a claim recites "a compound X, consisting of 40 to 60% by weight of component A, 30 to 50% by weight of component B, and 20 to 30% by weight of component C," in which the sum of the upper limit value of component A and the lower limit values of the components B and C exceeds 100% weight percent.
  - For a composition defined by a close-ended type transitional phrase, the sum of the lower limit value of a certain component of the composition and the upper limit values of other components is less than 100%, e.g., a claim recites "a composition X, consisting of 10 to 30% by weight of component A, 20 to 60% by weight of component B, and 5 to 40% by weight of component C," in which the sum of the lower limit value of the component B and the upper limit value of the component A and component C is less than 100% weight percent.

Requirements for Claims

- A claim recites "a method for producing a final product D, comprising a first step of producing an intermediate product B from a starting material A, and a second step of producing the final product D from an intermediate product C." Because the intermediate product B produced in the first step is different from the starting material C in the second step, as far as a person ordinarily skilled in the art is concerned, it is impossible to ascertain whether that the intermediate product is B , C, or contains both, thus rendering the claim unclear.

- **Lack of Clarity due to Unclear Expression**
  - A claim recites negative limitation can be used to “disclaim” the part which overlaps with the prior art, such as "except for“ or similar terms of disclaimer.
    - Such terms can be expressed only if they have clear meanings in a specific technical field, or if a person ordinarily skilled in the art can understand the scope thereof. In addition, if it is not possible to clearly and concisely define a claim using positive recitation, e.g., to evade prior arts, the use of negative expression may be permitted to explicitly exclude the portion that belongs to the prior art.

Requirements for Claims

- Terms of numerical definitions in the claims that merely indicate an upper or lower limit, or contain the numerical value of 0 or 100%, e.g., "greater than...," "0~...%," or similar expressions.
  - Such terms can be used only if they have clear meanings in a specific technical field, or a person ordinarily skilled in the art can understand the scope thereof.

- Use of "about," "approximately," or similar terms in the claims
  - Such terms can be used as long as a person ordinarily skilled in the art can understand the claimed scope. In addition, in the examination of novelty and inventive step of a claim, if a person ordinarily skilled in the art determines that the scope of the claim is unable to distinguish from the prior art, the claim should still be deemed unclear, and such terms of expression should not be permitted.

Requirements for Claims

- Use of "if necessary," "preferably," "etc.,"or similar expressions in the claims
  - Such expressions can be used as long as a person ordinarily skilled in the art can understand the claimed scope.

- Use of terms of relative standard or unclear degree, e.g., "far greater," "low temperature," or similar terms in the claims
  - Such terms can be used only if they possess clear meanings in a specific technical field, or if the scope thereof is comprehensible by a person ordinarily skilled in the art.

Clarity of special types of claims

- **Markush-Type Claims**
  - When generalizing through alternative format , each of the parallel option shall possess analogous nature. A generalization by a technical feature comprising a generic concept shall not be recited in parallel with a technical feature comprising a specific concept. Alternative format refers to the format where a claim recites a group of inventions, and each invention in the invention group is respectively defined by individual options in the alternative format recited in the claim, with parallel listing of the particular features of the multiple options by "and" and "or," e.g.,, "feature A, B, C, or D" and "a substance selected from the group of substance consisting of A, B, C, and D," etc.

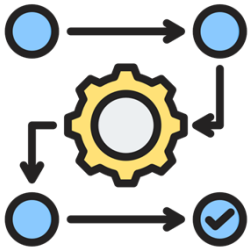
Example
【Claim】
A compound X, ... whose substituent Y is selected from the group consisting of halogen, chlorine and alkyl.
【Remark】
As "halogen" is a superordinate concept of "chlorine", it is improper to juxtapose the two options in alternative format.

Clarity of special types of claims

- **Product-by-Process Claim**
  - If the technical characteristics of the object included in the product-by-process claim, the manufacturing method must be further examined. If the manufacturing method simply represents the shape, components and their connection relationships, such as mechanical welding, lamination, and riveting. etc., because it simply expresses the state of an object, and a person ordinarily skilled in the art can already understand the structure and/or characteristics of the object defined in this description, and does not constitute a judgment on subsequent novelty and progress. If the impact is caused, this description of the manufacturing method can be regarded as clear.

Clarity of special types of claims

- If the claim includes something defined by manufacturing methods, but the manufacturing method definition does not simply represent the shape, components and their connection relationships, it can be further divided into "defined by manufacturing methods only" and "defined by both manufacturing methods and structure and/or characteristic definition" two situations.
  - When the technical characteristics included in the claim are only defined by manufacturing methods, since the same thing is not defined using two or more ways in the claim, it will not lead to a contradictory situation in the defined thing. In addition to contradictory issues, the examiner must still refer to the ordinarily skills in the art belongs at the time of application to check whether it contains general ambiguities as taught in the examination guidelines.



Clarity of special types of claims

- When the technical characteristics of the object in the claim are defined by both the manufacturing method and the structure and/or characteristics, then the scope defined by the "manufacturing method" and the "structure and/or characteristics" must be compared. If the scope of the claim is contradictory, a person ordinarily skilled in the art cannot understand whether the scope of the claim that the applicant really wants to protect in this claim is defined by "structure and/or characteristics" or by "manufacturing method“. It will have an impact on the subsequent judgment of novelty and inventive step. On the contrary, if the scope of the claim defined by these two is not inconsistent, a person ordinarily skilled in the art can understand this scope of the claim that the applicant really wants to protect in this object. Although using two different ways to define the same thing, actually further limits the object applicant wants to request and expresses its content more clearly.

Clarity of special types of claims

- **Product-by-Parameter Claims**

  To determine whether product-by-parameter claim meets the clear requirements, it is most important to confirm the technical significance of the parameter itself. Only after confirming the technical significance of the parameter itself can we continue to judge whether the entire claim is clear.

  - Regarding how to confirm the technical significance of the parameters themselves, the following four operating procedures are provided for reference.
    - Whether they are well-known parameters: The examiner will search and confirm whether the relevant parameters are well-known parameters recorded in the prior art at the time of application, and make a judgment based on ordinarily skill at the time of application.
    - Is it an exception where the parameter measurement method does not need to be recorded? In principle, the parameter measurement method should be recorded in the claim. However, if the parameter is publicly known, it does not need to be recorded.

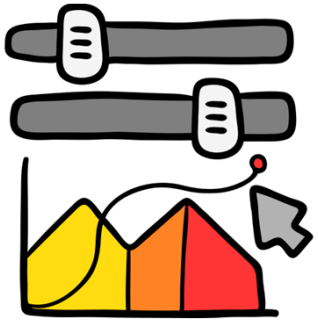
Clarity of special types of claims

- Whether the description discloses parameter-related information in detail: In principle, the measurement method of the parameter should be recorded in the claim. However, when the measurement method is too lengthy, not concise enough or difficult to understand, and may make the claim unclear, the claim only need to refer to the measurement method stated in the description; if the description does not reveal the measurement method, and a person ordinarily skilled in the art cannot understand its technical meaning, there will be unclear.

Clarity of special types of claims

- After understanding the technical meaning of the parameters, proceed to interpret the invention as a whole as claimed. In addition to following the principled norms regarding the clarity of claims in the examination guidelines, the judgment of product-by-parameter claims must also consider "whether the technical characteristics of the object cannot be clearly defined by the structure, then it can be determined through parameter/mathematical relations", and "whether the relationship or difference with previously known objects can be judged".
  - Whether the technical characteristics of an object cannot be clearly defined by its structure or can only be defined through parameters/mathematical relations: This way of product-by-parameter claims to define an object is usually because the structure or composition of the object is known, but the prior art has not studied the special properties of the known object. The parameters have a limiting effect on the structural characteristics of the object. At this time, if the invention of the application cannot be clearly expressed only by expressing the technical characteristics of the object in terms of structure or composition, it can be defined by parameters or mathematical relationships.

Clarity of special types of claims



- On the contrary, if the invention for which a patent is applied for is represented by a structure but is expressed in terms of parameter definitions, the invention will be unclear. For example, the description of "a composition containing mixed oxides of cerium and zirconium as the main components". In the description, it is said that cerium and zirconium have a specific composition structure (such as a regular arrangement of cerium and zirconium). If it does not have a specific structure, it will not be able to promote the oxidation reaction of carbon monoxide and hydrocarbons. In this case, , the applicant can clearly express their invention through the structure, but they do not use this structural feature as the technical feature of their invention, but want to define it in a more general way, such as "the total pore volume is at least 0.6cm^3/g". Such definition methods will cause unclear.

Clarity of special types of claims

- Whether it is possible to determine the relationship or difference with what is known in the prior art: According to the spirit of the examination guidelines, the technical characteristics of the object are defined by parameters in the claim. If a person ordinarily skilled in the art can base one the recited parameters with reference to common general knowledge at the time of filing, conceive a specific product, he/she can understand the technical characteristics contained in the claim that are used to judge novelty, inventive step and other patentability, so the claim should be deemed to be clear. In summary, comparison with previously known technologies will help further clarify the relative limits of the scope of the claim. When an invention is defined by non-public parameters, it is difficult to imagine a specific object due to a lack of relevant knowledge. Therefore, if we can compare it with known objects, we can further explore the relative limits.

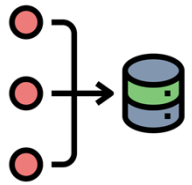
The meaning of supported by the description

- The determination of the claimed invention in the claims must be based on what's recited in the description and recognized by the applicant at the time of filing. The claims must be supported by the description means that the subject matter recited in each claim must be based on the content disclosed in the description, and the scope of the claim must not exceed the content disclosed in the description.
- A claim should be deemed supported by the description when a person ordinarily skilled in the art can reasonably predict or extend the full scope of the claim from the content disclosed in the description, through referencing the common general knowledge at the time of filing, using routine experimentation or analytical methods. If the description alone cannot support the claim, yet the description and drawings as a whole can provide support, the applicant should be notified to file a response or amendment to incorporate the content disclosed by the drawings into the description, pursuant to paragraph 2, Article 26 of the Patent Act.

The type cannot be supported by the description

- **Those not recorded in form or substance**
    - Where an invention recited in the claims is not described in the description, and a person ordinarily skilled in the art, despite referencing the common general knowledge at the time of filing, still cannot extend the disclosed content of the description to the scope of the claims, the claims should be deemed to lack support from the description. For example, the claims recite the technical solution of using inorganic acids, while the description only recites examples of using organic acids, but does not describe any technical solution corresponding to inorganic acids.
- **Those cannot be applied by analogy**
    - If a claim contains contents speculated by the applicant and its effect is difficult to determine, the claim should be deemed to lack support from the description. For example, a claim recites "a method for treating plant seeds by cold shock." If the description only discloses that the method is applicable to a specific plant seed, but does not disclose its applicability on other plant seeds, it would be difficult for a person ordinarily skilled in the art to ascertain whether the application of the method to other species of plant seeds would yield the same technical effect. Therefore, the claim should be deemed to lack support from the description.

The type cannot be supported by the description



- **Those which cannot expand to generic concepts**
  - For generic claim, although the scope of generalization is broader, if it is supportable by the description and is enabling, the generic claim should be accepted. However, if the content recited in the description is unclear or insufficient, e.g., when the application of routine method experiment or analysis is not enough to extend the recited content of the description to the scope of the claims, the applicant should be notified to file a response or amendment to the claims. For example, for a claim that recites "a method for processing the properties of synthetic resin moldings," if the description only discloses examples of thermoplastic resins with out providing proofs that the method is also applicable to thermosetting resins, then the claim is not supported by the description.

A reasonable number of embodiments or examples

- Claims are usually generalized from one or more embodiment(s) or example(s). The generalized scope of the claims should be appropriate so that the scope of the claims is equivalent to the content disclosed in the description. During examination, the general knowledge at the time of application, including relevant prior art, should be considered to determine whether the generalized scope of the claims is appropriate. In the absence of relevant prior art, a pioneering invention may generally warrant a wider coverage than an improvement invention of the prior art.
- When the scope of a claim is relatively broad, the description must provide a certain number of embodiments or examples, so as to extend and cover the fully scope of the claims. Conversely, when the description has provided sufficient information so that a person ordinarily skilled in the art, upon referencing the common general knowledge at the time of filing, may be able to practice the claimed invention, the finite number (even a single) of embodiments or examples may also be sufficient to support a broad claim scope.

Relationship between Supported by the Description and the Enablement Requirement

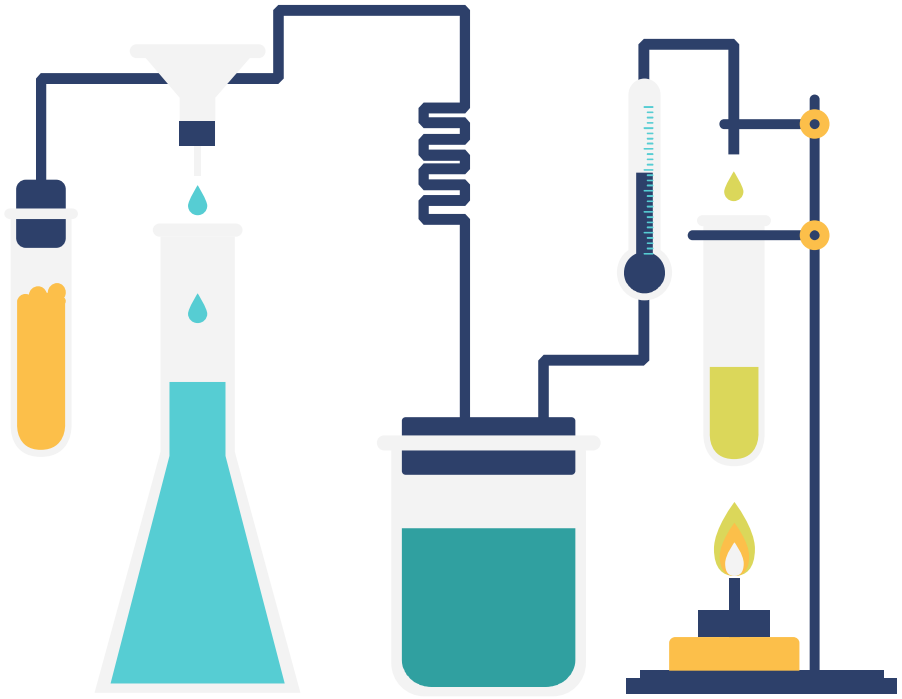
- The description must provide sufficient information, including embodiments or examples, to enable a person ordinarily skilled in the art to realize the invention for which the patent is applied for (the enablement requirement), and the invention for which the patent is applied for in the claim can be supported by the description (the supporting requirement). The main body that can be used to the enablement requirements is the description, and the main body that can be used to the supporting requirement is the claim.
- If the claim cannot be supported by the description, the claim does not meet the supporting requirements of Article 26, Paragraph 2 of the Patent Act. At this time, the description in the description is usually not clear and sufficient, and a person ordinarily in the art cannot realize the entire scope, so the description does not meet the enablement requirement under Article 26, Paragraph 1 of the Patent Act. Therefore, in practice, most applications violate the above two requirements at the same time.

Relationship between supporting requirements and clarity requirements

- If the scope of the claim is broad, it may violate the supporting requirements or the enablement requirements, but it may not violate the clarity requirements. For example, the claim states that the material of the requested equipment is metal, and the description only describes the example of iron. Because the scope of the claim is relatively broad, it may violate the supporting requirements or the enablement requirements, but it does not violate the clarity requirements because the metal is clearly stated. For another example, the claim states that the substituent of the requested compound is an alkyl group, and the description only describes examples of methyl groups, which does not violate the clarity requirement.

Judgment of supporting requirements for product-by-parameter claims

- Technical characteristics defined by parameters usually define a numerical range or endpoint (upper/lower limit), and the examples described in the description are to illustrate preferred specific implementations of the invention, and their number mainly depends on the comprehensiveness of the technical features contained in the patent application scope.
- To determine whether the product-by-parameter claim meets the supporting and enablement requirement, the embodiments in the description corresponding to the general scope of the claim should meet the following conditions:(1) The methods and examples described in the description can obtain all examples within the scope of the claims without excessive experimentation. (2) The scope stated in the claim must be commensurate with the scope disclosed in the description, or can be achieved by technical means understood by common knowledge. This judgment method is the same as that for other general type claims.



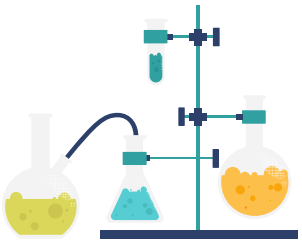
Novelty

Lack of Novelty Based on Legal Fiction

- **Concept of Lack of Novelty based on Legal Fiction**
- Prior art includes all the information available to the public before the filing of a patent application. Normally, an earlier-filed application for invention or utility model which is filed prior to but laid-open or published after the filing date of a later-filed application should not constitute prior art.
- However, according to the stipulations of the Patent Act, contents disclosed in the description, claims or drawings of an earlier-filed application for invention or utility model still belong to the prior art for the purpose of determining novelty. Therefore, if the claimed invention of a later-filed application is the same as the technical contents disclosed in the description claims or drawings of an earlier-filed application, the later-filed application should be deemed lacking novelty based on legal fiction.

- Lack of novelty based on legal fiction is a special regulation of the Patent Act. Since such prior art is not laid-open or published prior to the filing date of the later-filed application, it is not applicable to the examination of the inventive step.

Lack of Novelty Based on Legal Fiction



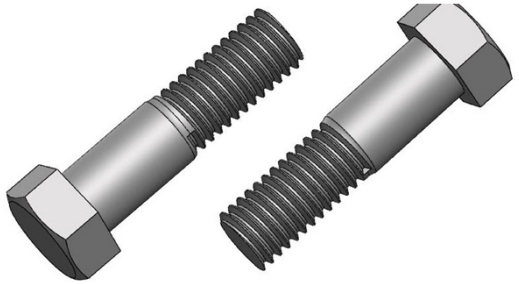
- **Criteria for Determination of Lack of Novelty based on Legal Fiction**
- The criteria for determination of lack of novelty based on legal fiction is as following:
- (1) totally identical,
- (2) the difference only lies in the literal descriptions or in the technical features which can be directly or unambiguously deduced,
- (3) the difference resides in the generic and specific concepts of the corresponding technical features,
- (4) the difference lies only in the technical features which can be directly substituted based on common general knowledge.
- The aforementioned criterion (4) means that a claimed invention differs from the prior art only in some technical features, but a person ordinarily skilled in the art can directly make a replacement of the different technical features on the basis of common general knowledge.

Lack of Novelty Based on Legal Fiction

- For example, if prior art discloses a screw as a fastening element and the screw has only "tightening" and "loosening" functions according to the technical means disclosed in the prior art, because a bolt also has said dual functions, if an invention of a patent application only replaces the screw in the prior art with a bolt, such a replacement should be deemed a direct replacement deducible from common general knowledge.

Screw

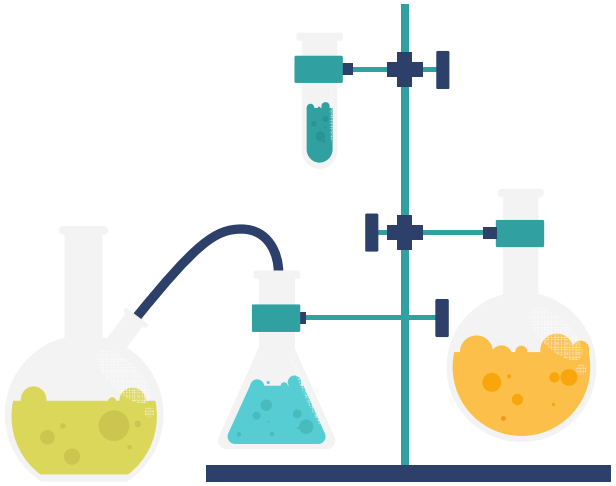
Bolt

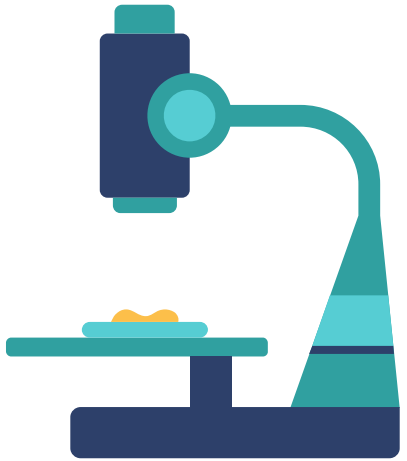


https://www.amazon.com/Stainless-Finish-Phillips-Self-Drilling-Threads/dp/B00DD4NK16
https://www.iqsdirectory.com/articles/bolts/types-of-bolts.html

Lack of Novelty Based on Legal Fiction

- **Applicant**
- Lacking novelty based on legal fiction applies only to the condition in which an earlier-filed application and a later-filed application are filed by different applicants at different filing dates where the invention set forth in the claims of the later-filed application has identical contents with those disclosed in the description, claims or drawings of the earlier-filed application.





Selection Inventions

- Selection inventions deal with the selection of individual elements, sub-sets, or sub-ranges, which have not been explicitly mentioned, within a larger set or range known in the prior art. Selection inventions are often applied in the technical fields of chemicals and materials.

Selection Inventions

- **Selection of Individual Elements or Sub Sets**
- If all the selectable elements disclosed in the technical content of the prior art are addressed in a single set, a selection invention consisting of any one of the elements selected therefrom does not confer novelty. Where all the selectable elements disclosed in the technical content of the prior art are addressed in two or more sets, if a selection invention consists of the elements respectively selected from the different sets so that the combination constitutes combining elements from different sets, and if such a combination is not specifically disclosed in the prior art, the selection invention is deemed to be novel.

Selection Inventions

- **Selection of Individual Elements or Sub Sets**
- The aforementioned selection consisting of two or more sets usually has the following conditions:
- (1) A known chemical general formula has two or more substituent sets. The compound as claimed consists of the specific substituents, which are respectively selected from the different sets. The principles are also applicable when determining the patentability of a compound consisting of the specific substituents, which are selected from the different sets respectively disclosed in different prior arts.
- (2) In an invention directed to a manufacturing process, the specific starting materials used are respectively selected from the different starting-material sets disclosed in the prior art
- (3) The specific parameter sub-ranges are selected from many different parameter ranges known in the prior art

Selection Inventions

- **Selection of Sub-Ranges**

If a selection invention is directed to a narrow range selected from a broader numerical range of the prior art, the selection invention is generally deemed to have novelty with the exception of when the prior art has disclosed the value(s) within the selected sub-range. Some examples follow.

(1) The prior art discloses that the amount of a component ranges from 5 wt.% to 25 wt.%. If the amount corresponding to the prior component in a claimed invention ranges from 10 wt.% to 15 wt.%, the claimed invention would be considered novel.

(2) In the above example, if the prior art has disclosed that the amount of the component can be 12 wt.%, the claimed invention would not be considered novel.

Selection Inventions

Example

【Claim】

A compound of general formula X, wherein the substituent R1 is COOH and the substituent R_2 is $CH_2CH_2CH_3$.

【Prior art】

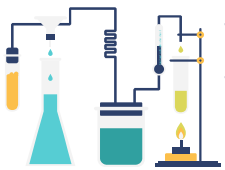
The general formula compound X, wherein the substituent R1 is a group of COOH, NH_2, ..., phenyl, and the substituent R_2 is a group selected from Cl, SO_3H, CH_3, ..., $CH_2CH_2CH_3$.

【Description】

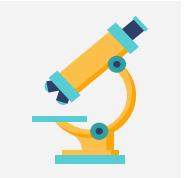
Because the prior art did not specifically disclose the individual compound produced by specifically selecting the combination of substituents COOH and $CH_2CH_2CH_3$ from the various options of R_1 and R_2, the claimed invention is considered novel.

Novelty of Specific Types - Product-by-Process Claims

- For a product-by-process claim, the invention to be patented should be the product *per se* whose properties are given by the process stated in the claim. In other words, whether a product-by-process claim has novelty or inventive step should not be determined based on the preparation process but rather the product *per se*. If the product specified in such type of claim is the identical with that disclosed in the prior art, or if they are different but the claimed product belongs to that which can be easily accomplished based on the prior art, even if the product disclosed in the prior art is prepared by a different process, the claimed product should **not** be granted a patent.
- For example, where a claimed invention is directed to a protein prepared by process P (steps P1, P2, ... and Pn), if the name of protein Z prepared by process Q (which differs from process P) is identical with that of the protein as claimed, the properties of protein Z are the same as those of the protein prepared by process P, and protein Z has been disclosed in the prior art, , the claimed protein lacks novelty regardless of whether or not the process P has been known to the public at the time of filing.



Novelty of Specific Types- Product Specified by Use



- If there is an expression specifying the product by use in a claim, the product to be protected should be interpreted as suitable for the use specified. However, the actual limitation of the special use depends on whether the special use influences the product to be protected. In other words, it depends on whether the use implies that the claimed product has a certain specific structure and/or component which is (are) particularly suitable for the use.
- For example, if a claim refers to a "mold for molten steel", a plastic ice cube tray disclosed in the prior art would not deprive the claim of novelty for that the use of molten steel renders the mold having structures and/or components to produce the properties for high melting point. In a further example, a claim is directed to "a crane hook." The use of crane implies that the hook has a structure with a specific size and intensity, and thus provides a limitation to the subject matter "hook." Although a fishing hook disclosed in the prior art has a similar shape, it would not come within the claims and not deprive the claim of novelty. In a further example, where a claim is directed to "a Fe based alloy for a piano string", the use "for a piano string" implies that the Fe based alloy has a lamellar microstructure supporting high tension, and thus provides a limitation to the subject matter. "Therefore, a Fe based alloy without a lamellar microstructure disclosed in the prior art would not come within the claim and not deprive the claim of novelty.

Novelty of Specific Types- Product Specified by Use

If the use of a product specified in a claim merely describes the purpose of or the way to use the product, and fails to imply that the product would have a certain structure and/or component, the use does not furnish any effect for determining whether or not the claim involves novelty or an inventive step. The following three conditions are provided:

(1)Compounds

The disclosure of **"compound X for use as a dye" in the prior art takes away the novelty of the claimed invention directed to "compound X for use as a catalyst**" for that those chemical structures determining **the attributes of the compounds are identical**, even if their stated uses are different.

(2)Composition

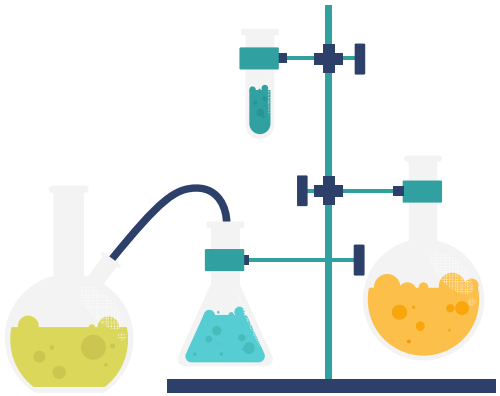
The disclosure of an **"insecticidal composition comprising A + B" in the prior art takes away the novelty** of the claimed invention directed to **"a cleaning composition comprising A + B"** for that their components determining the attributes are identical.

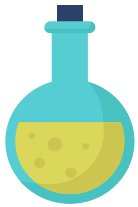
(3) Articles

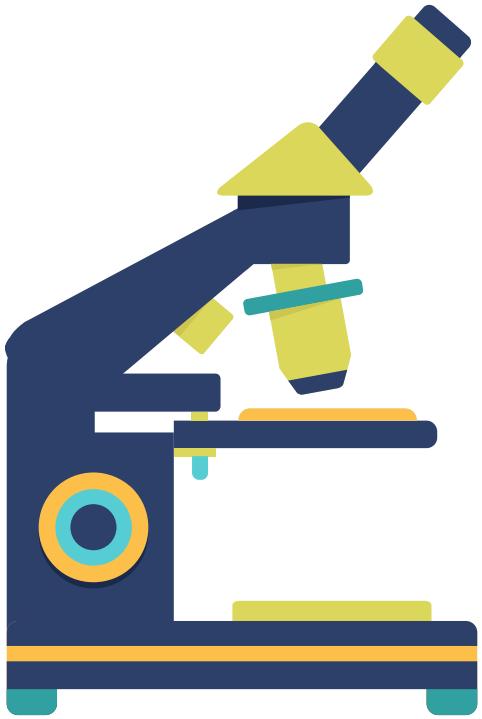
The disclosure of **a "U-shaped lock for a motorcycle"** in the prior art **takes away the novelty of the claimed invention directed to " a U-shaped lock for a bicycle"** for that structures *per se* of them are identical, even if their stated uses are different.

Novelty of Specific Types- Use Claims

- The patentability of a use claim rests upon discovering an unknown property of a product and upon finding out according to the purpose of usage that the product is suitable for a specific use which was unknown.
- Therefore, use claims are usually applied only to the technical fields where it is relatively difficult to know how to use the product only based on the structure or the name of the product, such as the technical field of using a chemical substance.







Inventive Step

Patent Act 22(2):

“An invention that is without the circumstances prescribed in the subparagraphs of the preceding paragraph but can be easily made by a person ordinarily skilled in the art based on prior art shall not be patented .”

A person ordinarily skilled in the art refers to a hypothetical person who is possessed of general knowledge and ordinary skill of the technical field to which the invention pertains at the time of filing, and is able to understand and utilize technologies known at the time of filing.

"Time of filing“ means the filing date. If an application claims an foreign priority or a domestic priority, "time of filing" means the priority date.

"General knowledge" includes well-known knowledge as disclosed in reference books or textbooks, and also includes information commonly used and items which can be understood from "rules of thumb.“ "Ordinary skill" means the ordinary ability to perform routine works and experiments. "General knowledge" together with "ordinary skill" refers to "common general knowledge."

Usually, determination of whether a claimed invention involves an inventive step should be made according to the following steps:

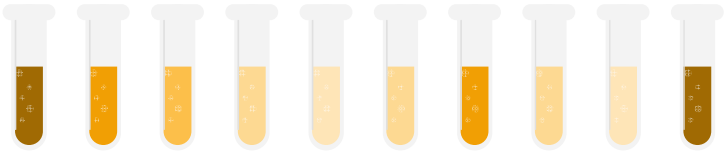
Step 1:determining the scope of a claimed invention;

Step 2:determining the contents disclosed in relevant prior art;

Step 3:determining the technical levels of a person ordinarily skilled in the art;

Step 4:determining the differences between the claimed invention and the relevant prior art; and

Step 5:determining whether a person ordinarily skilled in the art can easily accomplish the claimed invention based on the contents disclosed in relevant prior art and common general knowledge at the time of filing.



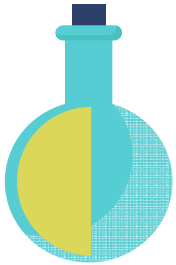
Sequence for determining Inventive Step

（１）Determining whether any of the factors in "3.4.1 Factors Negating Inventive Step" of this Chapter are applicable.

（２）Following item (1), if none of the factors in "Factors Negating Inventive Step" is applicable, the reasoning for lacking an inventive step cannot be established. The claimed invention could be considered as involving an inventive step.

（３）Following item (1), if any of the factors in "Factors Negating Inventive Step" is applicable, "3.4.2Factors Affirming Inventive Step" should then be taken into consideration.

（４）Following item (3), if there is no way to determine whether the reasoning for lacking an inventive step can be established upon considering "Factors Negating Inventive Step" and "Factors Affirming Inventive Step," the claimed invention could be considered as involving an inventive step. On the contrary, if the reasoning for lacking an inventive step can be established, the claimed invention could be considered as lacking an inventive step



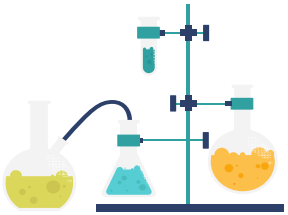
Factors Negating Inventive Step

- ✗ Motivation to Combine Multiple Citations
  1) Relation of Technical Fields
  2) Commonality of Problems to be Solved
  3) Commonality of Operations or Functions
  4) Teachings or Suggestions
- ✗ Simply Changing
- ✗ Mere aggregation

Factors Affirming Inventive Step

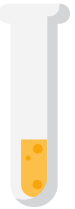
- ✓ Teaching away
- ✓ Advantageous Effects
- ✓ Auxiliary Factors Considered
  1) Invention Producing an Unexpected Effect
  2) Invention Solving a Long-Felt but Unsolved Problem
  3) Invention Overcoming a Technical Prejudice
  4) Invention Achieving Commercial Success

Factors Negating Inventive Step-Motivation to Combine Multiple Citations



- When determining an inventive step, a combination of the technical contents of multiple citations is usually involved. The examiner shall evaluate whether a person ordinarily skilled in the art would have motivation to combine the technical contents of multiple citations (for example, by combining technical content A of a primary citation with technic al content B of an additional citation) so as to accomplish the claimed invention (for example, the claimed invention comprising A and B). If there is a motivation to combine the citations, there exists a factor negating inventive step.
- When determining whether a person ordinarily skilled in the art would have motivation to combine the technical contents of multiple citations, the relation or similarity between the technical contents of multiple citations, rather than the relation or similarity between the technical contents of the citations and the technical contents of a claimed invention, should be taken into consideration, to prevent hindsight. In principle, an overall review of the factors "relation of technical fields," "similarity of problems to be solved," "similarity of operations or functions," and "teachings or suggestions" should be made.

Relation of Technical Fields



- "Relation of Technical Fields" should be determined based on whether the technical fields of the technical contents of multiple citations are identical or relevant.

- When determining the technical field of the technical contents of a certain citation, the article, principle, mechanism or function which applies the technique can be taken into consideration.

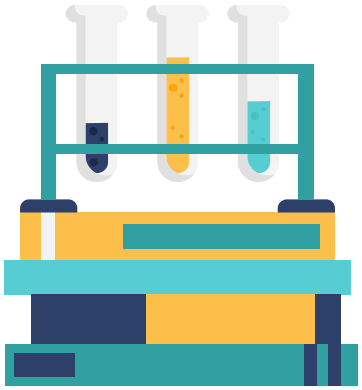
- Generally, even if the technical fields of the technical contents of multiple citations are deemed relevant, it would be difficult to directly determine that a person ordinarily skilled in the art would have motivation to combine the citations. In principle, one or more of " Commonality of Problems to be Solved," " Similarity of Operations or Functions," and "Teachings or Suggestions" should be further taken into consideration.

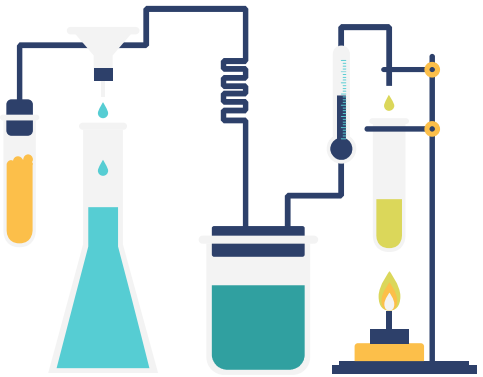
Commonality of Problems to be Solved

- "Similarity of Problems to be Solved" should be determined based on whether the technical contents of multiple citations contain a substantially identical problem to be solved.
- When determining the problem to be solved by the technical contents of a certain citation, consideration should be made based on the problem to be solved disclosed in the citation, on the problem to be solved which is easily deducible by a person ordinarily skilled in the art therefrom and so on.
- If the problems to be solved by the technical contents of multiple citations have commonality, it can then be determined that a person ordinarily skilled in the art would have motivation to combine the technical contents of the citations.

Commonality of Operations or Functions

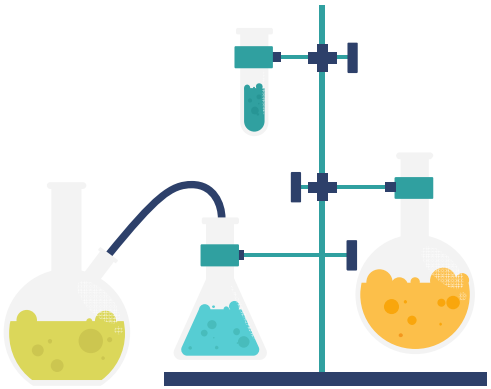
- "Commonality of operations or functions" should be determined based on whether the technical contents of multiple citations contain substantially identical operations or functions.
- If the operations or functions disclosed in the technical contents of multiple citations have commonality , it can then be determine d that a person ordinarily skilled in the art would have motivation to combine the technical contents of the citations.





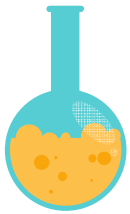
Teachings or Suggestions

- If the technical contents of a relevant citation have provided a teaching or suggestion explicitly stated or substantially implied combining the technical contents of different citations, for example, at least one of citations A and B provides a teaching or suggestion that the technical contents of the two citations can be combined, or a further citation C provides a teaching or suggestion that the technical contents of citations A and B can be combined, it may be deemed that a person ordinarily skilled in the art has a strong motivation to combine the technical contents of the citations (i.e., citations A and B).



Simply Changing

- With respect to the distinguishing technical feature between the technical contents of a claimed invention and those of a single citation, when attempting to address a certain problem, if a person ordinarily skilled in the art can accomplish the claimed invention through simply modifying, replacing, omitting, or converting the distinguishing technical feature of the single citation based on common general knowledge at the time of filing, the claimed invention should be considered "simply changing" the technical contents of said single citation.
- If a claimed invention is a simple change of the technical contents of a single citation, it is determined that there exists a factor negating inventive step. If the technical contents of the single citation or the technical contents of a further citation provide a teaching or suggestion of such "simply changing," said teaching or suggestion should be deemed strong evidence in support of the existence of a factor negating inventive step.



Teaching Away

- In "Step 2:Determining the Contents Disclosed in Relevant Prior Art" for determining inventive step, all contents disclosed in the relevant prior art should be taken into consideration, including whether the relevant prior art teaches away from a claimed invention.
- The term "teach away" refers to the relevant prior art providing a teaching or suggestion explicitly stating or substantially implying that a claimed invention is excluded, including a teaching or suggestion that the relevant technical features of a claimed invention cannot be combined, or that a person ordinarily skilled in the art would be dissuaded from taking the approach taught by the technical contents based on the technical contents disclosed by the citation.
- If the relevant prior art teaches away from a claimed invention, it may be determined that there exists a factor affirming an inventive step.

Advantageous Effects

- When determining whether a claimed invention involves an inventive step, the advantageous effect of the invention as compared with prior art should be taken into consideration. The advantageous effect includes that disclosed in the description submitted at the time of filing as well as that asserted by the applicant during the submission of amendment or response. It should be noted that the advantageous effect should be the technical effect directly resulting from the technical means for practicing the invention. In other words, it should be the technical effect directly resulting from all the technical features which constitute the technical means. In addition, the advantageous effect should be explicitly disclosed in the description, claims, or drawings submitted at the time of filing or easily deduced by a person ordinarily skilled in the art from the contents of the originally filed description, claims, or drawings. Advantageous effects which are not explicitly disclosed or cannot be deduced should not be taken into consideration.

Advantageous Effects

- If a claimed invention has advantageous effect over prior art, it is determined that there exists a factor affirming inventive step. If the advantageous efficacy is an "unexpected effect," it should be deemed strong evidence in support of the existence of a factor affirming inventive step.

Invention Producing an Unexpected Effect

- The term “producing an Unexpected Effect” means that as compared with a relevant prior art, the claimed invention produces a technical effect which is unexpected as compared with prior art, including a significant enhancement of an efficacy (i.e., a quantitative change) or a new performance (i.e., a qualitative change), wherein said effect cannot be expected by a person ordinarily skilled in the art at the time of filing. Alternatively, even if a claimed invention produces a significant enhancement of an effector a new performance, if such effect is expected for a person ordinarily skilled in the art at the time of filing, it still does not deem “an unexpected effect."
- If a claimed invention has an unexpected effect as compared with relevant prior art, it should be deemed strong evidence in support of the existence of a factor affirming inventive step. Therefore, even if a person ordinarily skilled in the art would be motivated by common general knowledge or prior technology existing at the time of filing to accomplish a claimed invention, as long as the claimed invention produces an unexpected effect, it can be deemed strong evidence in support of the existence of a factor affirming inventive step.

Invention Solving a Long-Felt but Unsolved Problem

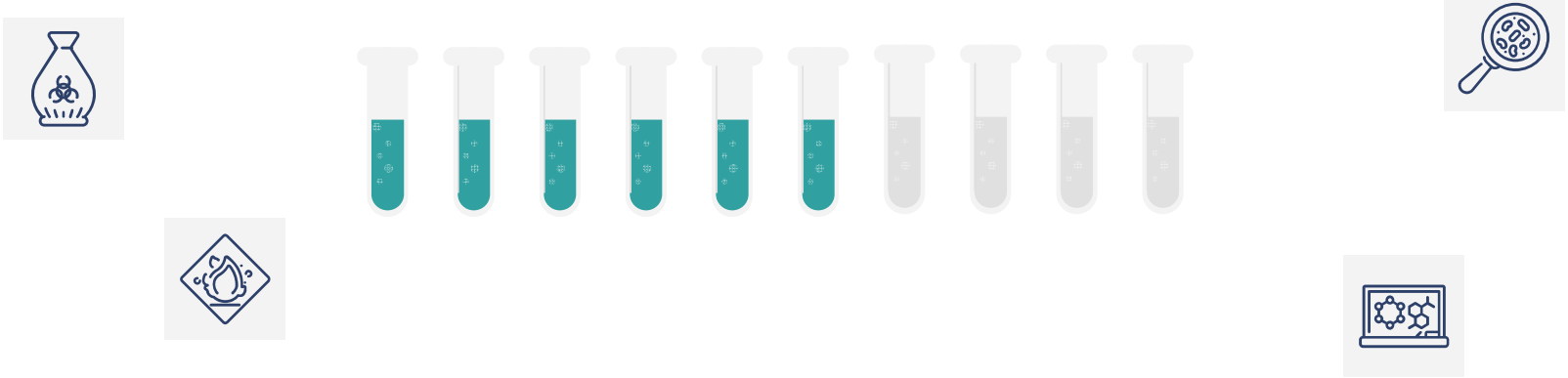
- If a claimed invention solves a long-felt but unsolved problem of prior art or satisfies a long-felt need among the public, it can be determined that there exists a factor affirming inventive step.
- When determining whether a problem is a long-felt but unsolved problem, the following three requirements must be simultaneously fulfilled: (1) the person ordinarily skilled in the art recognized the problem existed in the art for a long period of time without solution, (2) the problem must not have been solved by another before the claimed invention by applicant, and (3) The claimed invention must in fact successfully solve the problem.

Invention Overcoming a Technical Prejudice

- If a claimed invention uses a technical means abandoned based on a technical prejudice to deal with a certain technical problem in a certain technical field and said technical means solves the problem, it is determined that there exists a factor affirming inventive step.
- The term "technical prejudice" refers to the understanding in the art of a certain technical problem in a certain technical field that departs from the objective facts, which leads to the belief that there is no other possibility in the technical field.

Invention Achieving Commercial Success

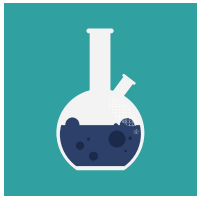
- If a claimed invention achieves commercial success and if the technical features of the invention directly bring about such success, rather than other factors such as selling technique or advertisement, it can be determined that there exists a factor affirming inventive step.



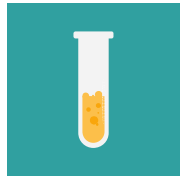
Advantageous Effect and Unexpected Effect

Advantageous Effects

- When determining whether a claimed invention involves an inventive step, the advantageous effect of the invention as compared with prior art should be taken into consideration. The advantageous effect includes that disclosed in the description submitted at the time of filing as well as that asserted by the applicant during the submission of amendment or response. It should be noted that the advantageous effect should be the technical effect directly resulting from the technical means for practicing the invention. In other words, it should be the technical effect directly resulting from all the technical features which constitute the technical means. In addition, the advantageous effect should be explicitly disclosed in the description, claims, or drawings submitted at the time of filing or easily deduced by a person ordinarily skilled in the art from the contents of the originally filed description, claims, or drawings. Advantageous effects which are not explicitly disclosed or cannot be deduced should not be taken into consideration.



Advantageous Effect and Unexpected Effect

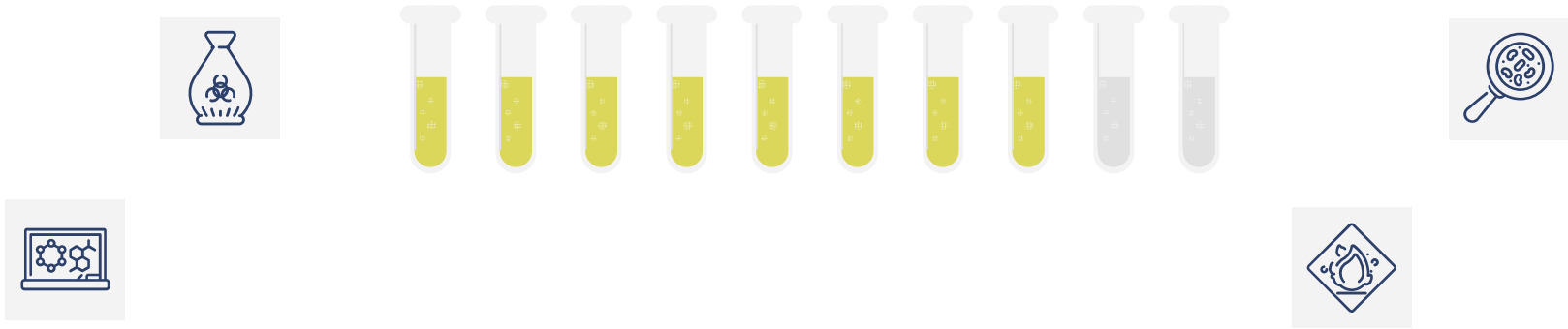


Invention Producing an Unexpected Effect

- The term "producing an Unexpected Effect" means that as compared with a relevant prior art, the claimed invention produces a technical effect which is unexpected as compared with prior art, including a significant enhancement of an efficacy (i.e., a quantitative change) or a new performance (i.e., a qualitative change), wherein said effect cannot be expected by a person ordinarily skilled in the art at the time of filing. Alternatively, even if a claimed invention produces a significant enhancement of an effector a new performance, if such effect is expected for a person ordinarily skilled in the art at the time of filing, it still does not deem "an unexpected effect."

Determination of an Inventive Step of a Selection Invention

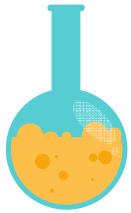
- A selection invention is an invention which is made by intentional selection of sub-sets, sub-ranges, or individual elements which have not been explicitly mentioned in a relevant prior art from a larger set or range disclosed in the relevant prior art.
- In a selection invention, if the selected part furnishes an unexpected effect as compared with a relevant prior art, it should be determined that the invention cannot be easily accomplished and has an inventive step .



Inventive Step of Product-by-Process Claims

For a product-by-process claim, the invention to be patented should be the product *per se* whose properties are given by the process stated in the claim.

In other words, whether a product-by-process claim has novelty or inventive step should not be determined based on the preparation process but rather the product *per se*. If the product specified in such type of claim is the identical with that disclosed in the prior art, or if they are different but the claimed product belongs to that which can be easily accomplished based on the prior art, even if the product disclosed in the prior art is prepared by a different process, the claimed product should not be granted a patent.



Thanks!