

**APPLICATION OF VALENCY THEORY TO THE TERM FORMATION PROCESS  
(BASED ON A TERM SYSTEM ‘NAMES OF BUILDING MATERIALS’)**

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In the modern linguistics, a limited amount of studies is devoted to “terminological valency”, however, this linguistic phenomenon needs thorough examination since it allows showing the process of appearance of new terms with certain accuracy, which makes this research topical.

According to the leading linguists’ research, the valency is one of the most important structural characteristics of lexical units, as it captures the entire distribution of this unit and its consistency with other units. Valency is based on the laws of semantic agreement and units collocation due to the presence of common components in their meaning (L. Novikov, M. Stepanova and others). The relevance of our research is conditioned by the necessity to analyze the principles of structure, semantics and functioning of the language units of professional terminology. Term is the key component among these units.

Building materials terminology system in the Ukrainian language at the beginning of the XXI century is the main focus of the article. The purpose of our research is to analyze the nomination means of the construction industry

special concepts. The nominals of building materials are examined, and the features reflected in their structures are analyzed. It is also examined how the correlation of the reality objects influences the combinability of terms which these materials name.

In this research the term “valency” is used as a synonym of the term “combinability”. A valency analysis is applied to analyze how the terms are created. As it is known, there are the following types of valency: semantic, lexical and syntactic.

The article examines the semantic and syntactic valency of terms in order to determine the corpus and properties of potential connections of terms and conditions of these connections fulfillment. The valency of the complex term is conditioned on a number of reasons: belonging of the term to one or another part of speech, the morphological structure of the term and its belonging to this or that topic group within a certain term system.

The valency analysis of suffix and complex derivative nominals of building materials has allowed to reveal the character of their semantic valency and to define the mechanisms of their formation.

## **ЗАСТОСУВАННЯ ТЕОРІЇ ВАЛЕНТНОСТІ В ДОСЛІДЖЕННІ ПРОЦЕСУ ТЕРМІНОЛОГІЧНОЇ НОМІНАЦІЇ (НА ПРИКЛАДІ ТЕРМІНОСИСТЕМИ «НАЙМЕНУВАННЯ БУДІВЕЛЬНИХ МАТЕРІАЛІВ»)**

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**Ключові слова:**  
термінологічна номінація,  
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валентність, будівельний  
термін.

У сучасному мовознавстві дослідженню «термінологічної валентності» присвячена незначна кількість праць, однак це лінгвістичне явище потребує ретельного вивчення, тому що дає змогу показати процес появи нових термінологічних найменувань з певною точністю, що й зумовлює актуальність цього дослідження.

Як показують дослідження провідних учених-лінгвістів, валентність є однією з найважливіших структурних характеристик лексичних одиниць, оскільки фіксує всю дистрибуцію цієї одиниці та сполучуваність такої одиниці з іншими. Валентність ґрунтується на законах смислового узгодження і співположення одиниць завдяки наявності в їхньому змісті загальних компонентів (Л. Новіков, М. Степанова та інші).

Актуальність нашого дослідження зумовлена необхідністю проаналізувати принципи будови, семантики та функціонування мовних одиниць фахових терміносистем. Центральну позицію серед цих одиниць посідає термін. Терміносистема найменувань будівельних матеріалів в українській мові на початку XXI століття є об'єктом дослідження цієї статті. Метою нашого дослідження є аналіз засобів номінації спеціальних понять будівельної індустрії. Розглянуто терміни-найменування будівельних матеріалів і проаналізовано, які ознаки понять відображені в їхніх структурах, проаналізовано, як впливає взаємозв'язок об'єктів дійсності на сполучуваність компонентів термінологічних найменувань, що означають ці матеріали.

У цьому дослідженні термін «валентність» використовується синонімічно терміну «сполучуваність». У статті застосовується валентний аналіз для того, щоб проаналізувати, як створено термінологічне найменування. Як відомо, наявні такі типи валентності: семантичний, лексичний і синтаксичний.

У статті розглядається семантична і синтаксична валентність термінологічних найменувань для визначення сукупності і властивості потенційно можливих зв'язків терміна й умови реалізації цих зв'язків. Валентність складеного термінологічного найменування зумовлена цілою низкою причин: належність терміна до тієї або іншої частини мови; морфемним складом терміна і дефініцією терміна, його належністю до тієї або іншої тематичної групи в межах терміносистеми.

Валентний аналіз суфіксальних і складних похідних термінів найменувань будівельних матеріалів дав змогу виявити характер їхньої семантичної валентності та визначити поняттєві механізми творення.

**Problem statement.** At the end of the XX century and at the beginning of the XXI century, the professional building term systems are supplemented by a large number of new terms. At this stage, the general standard language functions as material basis of terminology, because in most scenarios term systems have been enriched both by completely new terms and by giving new meaning to old terminological units.

In modern linguistics, a small number of works are focused on a separate study of “terminological valency”, but this linguistic phenomenon requires scrupulous study, because it allows showing the emergence of new term denominations with some accuracy, which determines the relevance of this study. The relevance of the research is conditioned by the need to analyze the principles of structure, semantics and functioning of language units of professional terminology. Among these units the term holds the central position.

**The object of the research** is the term system of denominations of building materials in Ukrainian language at the beginning of the XXI century.

**The subject of the research** includes the following tasks: a) to cover some theoretical aspects of the valency approach in relation to term nomination; b) to define possible computational applications; c) to study special aspects of terminological valency.

**The purpose of the research** is to determine the potentialities for creation of new terms using elements of valency analysis at the level of term structure. The solution of the following tasks can be provided by defining the concept of “valency” as well as by analyzing the different types of terminological valency.

The theory of linguistic valency has been successfully studied at different times by such well-known linguists as M. Stepanova, G. Helbig, I. Novikov [1; 2; 3; 8]. The works of G. Helbig,

D. Höllein, Á. Vilmos, K. Fischer are focused on some aspects of valency.

The properties or the relationships of the objects are reflected in their names. This work uses valency analysis to study how an object denomination is created, what characteristics of the objects are combined and reflected in the meaning of this denomination. According to L. Novikov, the valency is one of the most important structural characteristics of lexical units, as it captures the entire distribution of such units and the compatibility of one unit with others. The valency is based on the laws of semantic coordination and juxtaposition of units, due to the common components in their content [1, p. 94]. Thus, in the names of *торткретбетон, вакуум-бетон, віброштампований бетон, центрифужований бетон, литий бетон*, the common component is the seme “technique of formation”; in the names of *бетоніт, азбестит, соломіт, глиніт, асбокартон, гіпсокартон, алюмоферитний портландцемент, асфальтовий цемент, пуцолановий портландцемент*, the common component is the seme “material composition”. The problem of valency is one of the main principles of the methodology of modern linguistic and methodological research. This is evidenced by a number of scientific articles on valency theory and valency analysis. An embrace of the problem of valency of language units at different levels is conditioned by a variety of reasons, which are mentioned by M. Stepanova, “the recognition of the systemic nature of language in the whole scope of its functioning implies the systematic nature of the links between its elements, which became one of the prerequisites for studying the valency as a regularity of these systemic links” [3, p. 12–13].

Linguistics has borrowed the concept of valency from chemistry. Valency in linguistics, as in chemistry, implies the ability of any “acceptor” element to create relationships with other elements that fill the gaps around this acceptor.

The linguistic meaning of valency derives from the definition of valency in chemistry. The valency metaphor appeared first in linguistics in Charles Sanders Peirce’s essay “The Logic of Relatives” in 1897, and it then surfaced in the works of a number of linguists decades later in the late 1940s and 1950s. Lucien Tesnière is credited most with having established the valency concept in linguistics [7].

In this study, as in the works of M. Stepanova, the term of “valency” is used synonymously with the term of “compatibility”, because these two terms denote two sides of the same phenomenon: the ability to create relationships and the realization of this ability [3]. Another understanding of these terms is found in the works of Á. Vilmos, L. Eichinger, P. Hellwig and others who entitle as “valency” the potential compatibility of homogeneous elements of

language and attribute it to the language factors, and consider “compatibility” as the realized valency, that is to say the factor of language [6].

According to D. Höllein from his article “Valency Theory”, “valency theory is a grammatical theory which focuses on the verb or the predicate as its center. Modern valency theory was founded in 1959 by Lucien Tesnière and is based on the idea that verbs structure sentences by binding specific elements (complements, actants) as atoms do. Other, freely addable elements are not determined by the verb; these are called supplements, adjuncts, or circumstantials” [6].

In linguistics, the following types of valency are distinguished: semantic, lexical, syntactic valency.

In the linguistic literature, the ability of language units to choose as units of compatibility some language units with certain semantic characteristics and to exclude language units with other semantic characteristics is called semantic valency.

Lexical valency means the ability of a word as a lexeme to combine with other words as lexemes. Lexical valency is conditioned by the norm of word use, or *usus*. In course of distinguishing semantic and lexical valency of the word some emphasize that semantic compatibility runs “along the axis of semantic components” and exists within the conceptual structure of the word. A set of semantic multipliers as the conceptual structure of the word is described. Lexical valency is based on the semantic structure of the word, which includes many of its lexical and semantic variants. Thus, valency implies different compatibility of lexical and semantic variants of the word, due to *usus*.

Consequently, the word combination *fast turtle* is quite possible within the semantic valency, because in the meanings of these words the common seme is “speed”. It is possible to imagine a situation where one turtle is much faster than another. This first turtle in comparison with the second one is fast. The possibility of this situation determines such combination of words. In the term system of building materials, the examples of such compatibility are given by compound names such as *легкий пісок, легкий бетон*. It is known that concrete and sand are heavy materials. The common “weight” seme gives us a possibility to allow the combinations as *легкий пісок, легкий бетон*. The lack of common seme in the words *швидкий і бетон, швидкий і пісок* negates the emergence of combinations as *швидкий бетон* or *швидкий пісок*. Semantic compatibility is conditioned by the extra linguistic factors. The existence of concrete with a light filler as ceramsite and with a heavy filler as sand actualizes the combinations as *легкий бетон, важкий бетон*. And the existence of ceramsite sand, which is lighter than river sand, actualizes the combination of *легкий пісок*. The compatibility of



denomination components is due to the properties of the compound names. These properties are reflected in the meaningful structure of the name and determine the choice of partner word according to compatibility. The denomination components that have significant properties for a composite material with specified characteristics are included in the name of this composite material. Its essential properties are reflected in the differentiating and dominant senses in the meaning of this word.

As the terms within one term system are unambiguous, only one lexical and semantic variant functions in this term system, and its compatibility with other words is fixed by the “professional variant of normal”. The professional variant of normal determines the lexical compatibility of terminological vocabulary, that is why the analysis of lexical compatibility of special names stir interest in comparison with the word compatibility of general standard language. Meanwhile, this research does not set such a goal. The purpose of this article is to analyze the means of denomination of special concepts. It is necessary to consider the terms for building materials and analyze what concept characteristics they are reflecting, how the relationship of real objects affects the compatibility of the components of terms denominating these materials. That is why in this research only the semantic and syntactic valency of names is considered. Syntactic valency is defined as the entity and properties of potential word links, the set and conditions of realization of these links. This type of valency implies the mandatory or optional filling of the acceptor gaps with a certain number and types of elements that participate in the formation of a new term.

The acceptor is a basic component in the formation process and has the ability to attach dependent components. The ability of an element to choose and attach other elements is called active valency, and the ability of elements to join the acceptor is passive valency. Supporting components of compound words, core components of word groups and motivating bases of derivative terms have active valency. In complex and compound terms, the supporting (core) component names the generic characteristic and is active in attaching the component, which indicates a specific difference. Everything is different in derivative words. The suffix in the studied term system indicates a broad generic concept of “material”, while the base indicates a specific characteristic and is the semantic and structural center of the suffix term. It is the basis which forms models of derived words and chooses those affixes that are not contraindicated for this structure in grammatical and semantic sense. Thus, the bases of proper names are able to be connected with the suffix *-it*, but are not able to be connected

with *няк*, */-як* or with the suffix *-ин/а*: *байкаліт*, *сієніт*, *аргоніт*, але *залізняк*, *вапняк*, *дернина*.

The activity / passivity of component at the attaching of element of connectivity is related to the optionality / obligation of relationship. As a rule, the elements with an active valency (acceptors) are optionally attached to their elements because they are absolute. The absence of a differentiating element does not affect the semantic completeness of the term: *гінсоперліт – перліт*, *золобетон – бетон*, *піноскло – скло*, *теплоізоляційний бетон – бетон*, *спучений перліт – перліт*, *захисне скло – скло*. The use of some bases of derived words without a suffix also preserves the completeness of the sense: *глиніт – глина*, *морозин – мороз*, *профіліт – профіль*, *соломіт – солома*, *байкаліт – Байкал*, *сієніт – Сієна*, *залізняк – залізо*. These examples show that the attaching of an active acceptor to its element is optional in some cases.

Some linguists emphasize that the words with “absolute meaning”, formulated differently, the words that do not need the addition of dependent words, have only optional compatibility. This postulation is true for the words of general standard language. In term vocabulary, the processes are different. The point is that the term has absolute meaning only within the term field. In derived terms, the suffix is an onomasiological basis, in other words, the suffix refers the name to a certain term field. In the studied term system there are term fields of “materials” and “substances”. After rejection of a suffix, the resulting name come into the semantic field related with the meaning of the base or the second suffix, if there is the second one (for example: *олівініт – олівін*). The term remains in this term field if it is formed by a suffix added to another name of the substance or material. Thus, after rejecting the suffix of the words *залізняк*, *вапняк*, *глиніт*, *бетоніт*, *габроїд*, the base remains equal to the whole word – the name of building material. In this case, we can talk about the optional compatibility of the base and suffix within this term vocabulary. The word of general standard language becomes a term if its meaning is changed so that it corresponds to the term field of building materials: *тісто – цементне тісто*, *молоко – вапняне молоко*, *борошно – цементне борошно*. We can also add at this term field a suffix referring to the substance or material: *профіль – профіліт*, *Таймир – таймірит*, *мороз – морозин*. Therefore, the valency of such bases is obligatory in the semantic sense. It is mandatory within this term system. We can say the same about the valency of words with the general meaning of material in complex and compound names: *теплоізоляційний матеріал – твердий матеріал*, *будівельний виріб – красивий виріб*, *бетонна суміш – темна суміш*, *склопакет – новий пакет* and the others.

In this term system, such words have more than general meaning. To some extent, they are similar to the words of standard language with a general semantics (*line, character, subject, type*), which structure contains only a significant component. For a meaningful completeness, this type of words requires a determinant that would indicate a denotative correlation (*a series of questions, the nature of relationship, the type of link, a complex subject*). On the other hand, this term system, as well as general standard language itself, contains the components that, due to the relativity of their meaning, require mandatory definitions. “Related bases” serve as such components. Since related bases are considered to be used only in combination with some morpheme formant, the valency of such bases is absolutely mandatory.

In modern language, the *calc-*, *naphth-*, *acet-*, *alumin-* basics are used only in combination with suffixes: *кальцій, кальцина, нафтол, нафтен, ацетон, ацетат, ацеталь, алюмінат, алюміній*. Words are considered as informatively insufficient, if, due to their lexical meaning, they necessarily require a dependent form that reveals their meaning, fills in some information gaps and almost does not have absolute usage. The specifics of relationship of these words are the following: 1) the first dependent word has more specific lexical meaning in comparison with the supporting word; 2) from the point of view of the content, the related components do not have the separate design. In the term system of names of building materials, the component “agent” is informatively insufficient: compare with *піноутворювач, газоутворювач*. The specified component, despite its activity in the attaching of elements, has a mandatory compatibility. The compatibility of the dependent component is always mandatory. Noun-dependent components are known to determine such component. Analyzing the optional and mandatory nature of definitions in scientific texts, it should be noted that in scientific texts definitions are usually needed from the communication point of view. The need for a component in compound names is conditioned by the purpose of communication: to convey a certain message about the scientific and technical object, which indicates additional information, the specific characteristics of the object, which is important for this message.

Analyzing the compatibility of word components, M. Stepanova proposed the term “internal valency”. The grade of internal valency of a word is the regularity of the connection of the word components (in our case, the term components). This valency is determined by the ability to attach affixes to the bases or to the parts of a compound word. Internal valency is “related to the internal context”, in other terms, the design of the motivation of the word, its dependence

on the appropriate word-formation model and the meaning of the constituent bases themselves.

It is necessary to distinguish the “formal” and “semantic” internal valency. The parameters of formal internal valency include phonetic, morphological, structural and genetic patterns. Semantic internal valency presupposes semantic coordination on the grounds of realization of certain elements of words semantic structures, which are combined regardless of whether they are bases or word-forming models [2; 3]. In the course of considering the formal side of internal valency of the studied model, the following patterns were established: a) morphological: some phenomena at the morphemic boundary; b) word-forming: the presence or absence of a connecting vowel and the forms of its expression; c) morphological: the affiliation of words to certain word classes; d) genetic: the etymology of the basics. In studying the structural patterns of functioning and filling the term models, the method of direct components is used. Thus, it is possible to imagine not only a linear picture of the morpheme structure of the word, but also to identify the norms of term formation.

The first stage is to determine the motivating base and word-forming method, stated differently, the structural elements of the derivative term. At the affix type of terms formation, the basis of the derived term and the word-forming affix act as such elements. At stem composition the bases of a derived word and an interfix are the structural elements. At the analysis of phonetic valency it is necessary to identify obstacles that limit the word-forming activity of morphemes. In our study, the semantic limitations of morpheme compatibility is the combination of these morphemes only with those bases that have any common semantic property. Semantic regularities of functioning and filling of the models are revealed by means of component analysis. A compound name, in our case a compound term, is the only name for a holistic concept.

The relationships between the components of term word groups are intrastructural, so the valency of the denomination components of building materials is considered as the internal valency. The valency of a compound term is considered by a variety of reasons: the term belonging to one or another word class; morpheme composition of the term; definition of the term; its belonging to one or another thematic group within the term system.

**Conclusions.** The parameters of the formal internal valency of the denomination components of building materials include the following characteristics: morphological – belonging of the dependent word to a certain word class, its morphological form, morpheme composition; syntactic – the type of compound relationship, the means of the relationship realization, the order of components.

The valency analysis based on the term system of names of building materials allowed to reveal some specifics of the choice of onomasiological characteristics for denomination of building materials. Multicomponent names predominate in other professional term systems too. Despite this fact, one-word names are the core of the studied terminology, functioning as supporting components of numerous compound names. Word formation is one of the effective and powerful ways of formation of new terms in modern term system of names of building materials. Valency analysis of suffixal and compound derivative terms of names of building materials made it possible to identify the nature of their semantic valency and to determine the conceptual mechanisms of creation.

Our further research will be devoted to compiling educational dictionary of building terms based on valency theory. The types of terminological families and peculiarities of variation and antonymous relations have been determined and analyzed. The main means of building terminology word formation and the principal cognitive and onomasiological models of term derivatives have been fixed. Compiling term dictionary is long and complicated job but it will be of great interest to those who study and obtain building professions.

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