



KORKYT ATA  
UNIVERSITY



Approved»

Chairman of the Board -Rector  
of Korkyt Ata Kyzylorda University  
Karimova B. C.

October 30 2023y

**PROVISION**  
**Publication of scientific articles in the journal «Chemistry and Chemical  
Technology»**

Kyzylorda, 2023

### Information about the document

1. Developed by the Editorial and Publishing Division.
2. Approved and activated by the Chairman of the Board-Rector of Korkyt Ata Kyzylorda University from « October 30 2023 by order 430-9



## CONTENTS:

Definitions and Abbreviations	
1. General provision Applications .....	3
2. Editorial policy and direction of the journal	4
3. Ethics requirements for publication in the journal	5
4. Expert opinion and review of scientific articles submitted to the editorial office	8
5. Manual for authors of manuscripts	12
Applications .....	

## **Definitions and Abbreviations**

This Regulation uses the following abbreviation:

Korkyt Ata Kyzylorda University - Kyzylorda University named after Korkyt Ata.

MRNTI - international rubricator of scientific and technical information

GRNTI - Code of State Categories Scientific and Technical Information

DOI - Digital Object Identifier.

### **1. General provision**

These provision on the publication of articles in the journal "Chemistry and Chemical Technology" define the rules for preparing for publication of scientific articles in the journal "Chemistry and Chemical Technology", registered with the Information Committee of the Ministry of Information and Public Development of the Republic of Kazakhstan. Certificate of re-registration of periodicals, news agencies and online publications № KZ59VPY00066479 dated 03/16/2023.

Developed in accordance with:

- requirements for scientific publications to include them in the list of publications recommended for publication of the results of scientific activity, approved by Order № 20 of January 12, 2016 (Footnote. Item 2 - as amended by the Order of the Minister of Education and Science of the Republic of Kazakhstan dated 30.04.2020 № 170 (effective from 01.01.2021); as amended by the order of the Acting Minister of Science and Higher Education of the Republic of Kazakhstan dated 09.01.2023 № 7 (effective ten calendar days after the date of its first official publication).

### **2. Editorial politics and direction of the journal**

The journal «Chemistry and chemical Technology» is published 4 times a year and contains information about scientific works of national and foreign scientists and materials of scientific conferences, scientific and methodical articles, scientific creativity of youth, information about the university life.

Tasks of the Editorial politics of the journal «Chemistry and chemical Technology»:

to contribute to the improvement of the quality of scientific research, the identification of scientific potential for the introduction of advanced scientific achievements;

Enable scientists and young researchers to publish their research results;

to draw attention to the most relevant perspective and interesting areas:

focusing on the most relevant perspective and interesting areas of the agricultural industry:

ensure interaction and involve leading domestic and foreign scientists in

publications, establish an exchange of views between researchers.

relationships of all parties (editors, authors, reviewers) are based on compliance with the requirements to the ethics of publications.

the authors are responsible for the factual material in the articles

Materials that have received a negative review and rejected by the journal are not published and returned to the authors. The editorial office does not store rejected materials.

### **3. Ethics requirements for publication in the journal**

All parties involved in the process of preparing materials for publication in the journal - authors, expert commission, reviewers, editorial board members - should follow the following requirements for publication ethics.

The Editor-in-Chief may consult with members of the editorial board and reviewers when making a decision, who shall be guided by the following rules:

- do not disclose information about the submitted manuscript to anyone except the author, reviewers, potential reviewers, other editorial consultants and, if necessary, the publisher.

- do not discriminate in the evaluation of the authors' submissions;
- not to disclose without necessity information about the materials accepted from authors, except authors, reviewers;

- take reasonable measures to identify and prevent the publication of articles in which the research has been improperly conducted, discourage such violations or knowingly permit such violations;

- consider facts or allegations of improper research behaviour;

- be prepared to publish corrections, clarifications, rebuttals and apologies where necessary.

In the publishing process authors are guided by the following rules:

- to work in full compliance with current legal requirements regarding libel, copyright, legality and plagiarism;

- to provide reliable results of the work done on the original study and an objective discussion of its significance.

- contain enough content to ensure a review of the work.

- submitting the manuscript simultaneously to another edition is considered immoral and improper. The author must not submit to the magazine an article previously published in other publications;

- guarantee the complete originality of the presented material. If other authors' works or statements are used, relevant bibliographic references or excerpts are provided;

- do not allow plagiarism in any forms. The article should have at least 80% uniqueness of the text for publication.

- the second time the article gets the necessary indicator, the article is sent to the editorial board for consideration. An article that does not meet the relevant

requirements, the originality of which is twice checked, is not accepted for publication

- The article is not considered a plagiarism provided the author(s) refer to their own research work and the level of quotation of their scientific work does not exceed 20%.

- to follow the rules of autocitation (self-citation), namely, if the elements of the material were previously published in another article, including in the journal «Chemistry and Chemical Technology», the author must refer to the earlier work. Authors are advised to follow a self-citation rate of 0-10%.

- to disclose in their works information about funding, as well as the presence of interests of third parties, which may be perceived as having influenced the results or interpretation of their manuscript.

- informing the responsible editors in the scientific directions of the journal about a material error or inaccuracy in the work and providing constant contact with the editors of the journal to delete or correct the article.

#### **4. Expert opinion and review of scientific articles submitted to the editorial office**

Expert opinion and review of manuscripts of scientific articles for publication of the journal «Chemistry and chemical Technology» are carried out in order to maintain a high scientific and theoretical level of publication and selection of the most valuable and relevant (perspective) scientific works.

The Expert Commission may reject the materials and require the author(s) to bring them in accordance with the requirements of the scientific articles.

In order to ensure the quality of published materials and respect for copyright, all received materials are checked for borrowing. The verification of the program is carried out by the responsible employee of the university - «root administrator of the system», and only then are sent for review.

The authors, who send their articles for publication in the journal «Chemistry and Chemical Technology», express their consent to the publication of the article, to the placement of metadata of the article (full names and places of their affiliation, annotations, keywords, bibliographic list) in public access to the journal's website on the Internet, to transmit the text of the article (including links, bibliographic information, etc.) to persons and organizations to whom the information is obligatory, or to others in order to allow citation of the publication and to increase the index of citation of authors and journal, and confirm that the submitted articles were not published in other journals or submitted for publication in other journals.

The editorial office keeps a record of the passing of manuscripts procedure of expert evaluation and review.

The author(s) of the article sends the material to the consideration of the expert commission established by the order of the Chairman of the Board-Rector of Korkyt Ata Kyzylorda University. In turn, the expert commission checks the article for compliance with the rules of registration.

Expert opinion (to scientists whose scientific orientation corresponds to the content of the article) is given by any scientist in the approved expert commission. The expert opinion is a protocol (Annex 1) and an opinion of a member of the expert commission, written and signed in an arbitrary form and certified by the secretary of the organization (Annex 2).

After receiving the expert opinion, the author uploads (according to the instructions) through the site of the journal [vestnik.korkyt.kz](http://vestnik.korkyt.kz) scientific article, written in three languages information about the authors, annotations, and expert opinion of the article. The expert commission determines the compliance of the article on the profile of the journal, the requirements to the design.

The editorial board under the supervision of the chief editor checks the compliance to the scientific direction of the article submitted to the editorial office, and a decision is made on the acceptance or rejection of the article.

The responsible secretary checks the accepted articles in the program of antiplagiarism, after checking their compliance with the requirements specified in the technical design according to the instructions for authors. (The verification requirement in the program Antiplagiarism is fully described in the Rules of use of the system «Antiplagiarism».) The article, whose authenticity exceeds 80%, is sent for review.

The review procedure is carried out through the online submission and review system of articles, through «blind review» by a separate electronic site.

Reviewers are guided by the following rules:

- to work in full compliance with the editorial politics of the journal, taking into account the actual legal requirements regarding libel, copyright, legality and plagiarism;

- not to use unpublished materials obtained from submitted manuscripts for examination in personal research without written consent of the author;

- comply with review deadlines agreed with the responsible editors;

- notify the responsible editors and exclude yourself from the review process, feeling incompetent to review the research presented in the manuscript, or believing that a speedy review of the manuscript will be impossible.

- to consider any material received for review as a confidential document, not to disclose its contents and not to discuss with any persons other than responsible editors;

- to give an objective assessment of the materials submitted for review.

Reviewers should express their opinion clearly and reasoned.

- to draw the attention of the editors-in-chief of the series to any significant similarities or coincidences between the manuscript in question and any other published work.

The review procedure includes the following steps:

1. The article is sent for review to the Doctor of Sciences, the Candidate of Sciences or PhD, whose scientific specialization is most close to the subject of the scientific article.

2. The review period may vary depending on the specific situation, but not more than 4 working weeks.

3. The reviewer cannot be the author or co-author of the peer-reviewed work, as well as the scientific supervisors of the candidate academic degree, PhD degree and employees of the department in which the author works. Reviews are discussed by the editorial board and serve as a basis for acceptance or rejection of manuscripts.

4. The review should objectively assess the scientific article and contain a comprehensive analysis of its scientific and methodical advantages and disadvantages. The review is based on the standard proposed revision (Annex 3, table on the site).

In the review should be briefly evaluated:

- general scientific level of work;
- the title and its correspondence to the content of the article;
- relevance of the topic;
- scientific novelty,
- the practical significance of the presented conclusions;
- work structure;
- debating and/or incorrect provisions;
- – the positive aspects or shortcomings of the article are noted, what corrections and additions should be made by the author;
- – the reviewer's opinion on the possibility or impossibility of publishing the manuscript is stated.

Copies of the content of the review shall be communicated to the author(s) within a week after the editorial office received the expert opinion.

The article sent to the author for revision must be returned in the corrected form within 10 days with the corrections marked in the article.

The editorial board reserves the right to reject the articles in case of inability or unwillingness of the author to take into account the wishes of the editorial board.

The originals of the reviews are kept in the editorial office of the journal «Chemistry and Chemical Technology», for three years. Including to be made available to competent authorities upon request.

## **5. Manual for authors of manuscripts**

Ready scientific work for publication in the journal Bulletin of Kyzylorda University named after Korkyt Ata» can be submitted by the author (authors) through the system of online submission of articles on the site [vestnik.korkyt.kz](http://vestnik.korkyt.kz), using special instructions. The article should be written in Word format in Windows 10 in Times New Roman font (an article not written in accordance with this requirement will not be accepted automatically). Language of publications Kazakh, Russian, English.

Presenting the text of the work for publication in the journal, the author guarantees the correctness of all information about himself, the absence of plagiarism and other forms of wrongful borrowing in manuscripts, the proper design of all borrowings of the text, tables, schemes, illustrations.



The article should be presented experimental and documentary base, which served as the basis for the conducted research work, the possibility and importance of introducing the results of research into practical application, analysis of the current state of research, problems and specifics in comparison with earlier studies, the author(s) of the work should have scientific novelty and personal contribution to the development of the studied topic, the validity of conclusions, the relevance of the work.

The citation list in the article should contain only peer-reviewed literature sources, information sources that assign the DOI index according to the article structure.

The article pays special attention to the reliability of the information provided by the author (authors); correctness and accuracy of the definitions and conclusions used (introduced) by the author, compliance of the design of the article with standards or methodological recommendations, literacy, observance of style.

Structure and design of the article:

1) The size of the article ranges from 6 to 12 pages (without bibliography and annotations).

2) Description of the scheme of the article (page - A 4, book orientation, indents are calculated with respect to the left top and bottom sides page margins-2.5 m, with right - 2.0 m, Standard font : type - Times New Roman, size (font) - 12):

- the MRNTI index is the first line at the top left <http://grnti.ru/> .
- DOI index (provided by the editorial office);
- Title of article – with capital letters, alignment on the center in bold, size (font) 12.
- Initials and last name of author(s) - alignment on the center in bold, size (font) – 11, the number of authors - no more than 5;
- The full name of the organization, city, country (if the authors work in different organizations, it is necessary to put the same number near the name of the author and the relevant organization, e-mail address and orchid number of the authors,) - alignment on the center, italic, size (font) - 11.
- **Annotation** in the original language (150-200 words; retaining the structure of the article) size (font) - 11.
- **Key words** (in Kazakh, Russian, English from 5 to 8 words/phrases) size (font) - 11.
- **Main text** (12 font, line spacing - 1, indentation of red line#- 1.25 cm)
- Structure:

3) **Introduction:** rationale for the selection of the topic; relevance of the topic or problem; definition of the object, subject, objectives, tasks, methods, approaches, hypotheses and meanings of the work.

4) **Research materials and methods:** should consist of a description of the materials and the progress of work, as well as a full description of the methods used. This section describes how the problem was examined: detailed information without repeating previously published established procedures; uses hardware (software) identification and material description, with mandatory novelty in the use of materials and methods. Tables, figures must be placed after mention.

Each illustration must be accompanied by an inscription (size (point size) – 11). Drawings must be clear, clean, and not scanned. Titles of figures and tables, bold 11 font. Table indicators are presented in font 11. In the article, only those formulas that are referenced in the text are numbered. All abbreviations and abbreviations, with the exception of those that are obviously well-known, must be deciphered the first time they are mentioned in the text. In the text, links are displayed in square brackets.

Links must be strictly numbered in the text. The first reference to literature in the text must contain the number [1], the second - [2], etc. References to unpublished works are not allowed. Links to non-reviewed publications are not recommended.

5) **Results/discussion:** analysis and discussion of the findings of the study.

6) **Conclusion/conclusions:** synthesis and summary of the work at this stage; confirmation of the truth of the allegation made by the author. The conclusions should be used to summarize the results of the research in a scientific field, describing proposals or possibilities for further work. Information about financial support for the work must be indicated at the end of the article.

7) **list of literature** (size (font) - 11, quantity of literature used at least 15). 1) in alphabetical order in the language of the article without numbering; 2) Latin transliteration <http://www.translit.ru/>, within which vertical brackets provide English translation (Model - Annex 4).

The style of design of the list of literature in Russian and Kazakh according to the requirements of GOST P 7.0.100 – 2018 Bibliographic record. Bibliographic description. General requirements and rules of compilation».

They are also required if the journal is provided with scientific reviews, notes from scientists.

The authors are responsible for the absence of spelling and syntax errors in the manuscripts and full compliance with technical design requirements. The article, which does not meet the technical requirements of the design, is returned to the author for revision.

If scientific reviews and articles are submitted to the journal by scientists, they are also subject to registration requirements.

8) information about the authors: (must contain the full name of the author(s), full name of the organization, city, country, contact details: phone, email, Orcid ID) in 3 languages. If the author does not have an Orcid ID, you must register with the Orcid ID at the link: <https://orcid.org/>.

9) Articles received by the editors, if they meet the requirements, will be carried out in accordance with anti-plagiarism procedures. The article, the originality of which exceeds 80%, is sent for consideration to the editors. And the article below 80% is sent to the author for addition (The cost of the first check of the article for originality in the anti-plagiarism program is 1500 tenge, while re-checking the same article is 1000 tenge). After a positive feedback from the reviewers, the article is accepted for publication in the journal and the author is sent a notification of

payment. The author is obliged to send a payment receipt to the editorial office by e-mail (khabarshy@korkyt.kz).

**Article cost:**The cost of publishing one article in the journal "Chemistry and Chemical Technology" is 5000 tenge

*The editorial board of the journal provides 3 days for each author to review their articles before publishing the latest version of the PDF version on the website of the University "Chemistry and Chemical Technology" <https://vestnik.korkyt.kz> and on the Crossref website <https://apps.crossref.org/webDeposit/> / The final version of the journal will be published on the website after accepting the authors' reviews, responses, etc. The authors' notifications are not accepted and the editorial board is not responsible for subsequent identified errors.*

### **Payment details:**

University address: 120014, Republic of Kazakhstan, Kyzylorda, Aiteke bi st., 29a.

Ministry of Science and Higher Education of the Republic of Kazakhstan

JNSC Kyzylorda University named after Korkyt Ata

JSC Halyk Bank of Kazakhstan.

TIN 33 1000037638

BIN 960540000620

IIC KZ 276017201000000125


BIC HSBKKZKX

bc-16

TTK-859


**INTRODUCED (DEVELOPED)**

Head of the Editorial  
and Publishing Department

 Abuova N.A. \_\_\_\_\_  
signature date

**AGREED:**

Member of the board Vice-Rector  
for Research and  
International Relations

 Buribayeva M.A. \_\_\_\_\_  
signature data

Chief editor

 Omarov K.A. \_\_\_\_\_  
signature date

Head of International  
Relations Department

 Almakhanova G. \_\_\_\_\_  
signature date

**PROTOCOL №** \_\_\_\_\_  
 dated " \_\_\_\_\_ " \_\_\_\_\_ 20 \_\_\_\_\_  
 expert commission meetings Korkyt Ata Kyzylorda University

**Present:**

Commission Chairman	
	(scientific degree, full name)
Commission members	
	(scientific degree, full name)
Commission Secretary	
	(scientific degree, full name)

Listened to the report of the expert \_\_\_\_\_ (academic degree, full name) about the article \_\_\_\_\_ (academic degree, full name of the author(s)) " \_\_\_\_\_ " (name of the article), submitted for publication in the journal "Chemistry and Chemical Technology".

Questions, comments, objections, suggestions of experts: the material corresponds to the profile of the journal, the requirements for the design of manuscripts. This article does not contain information provided for in Article 12 of Chapter 3 of the current Law of the Republic of Kazakhstan "On State Secrets".

The decision was made: the expert commission considers it possible to publish the article " \_\_\_\_\_ " (name of the article) \_\_\_\_\_ (academic degree, full name of the author(s)) in the open press.

Commission Chairman  
(scientific degree, full name)

\_\_\_\_\_  
(signature)

Commission member  
(scientific degree, full name)

\_\_\_\_\_  
(signature)

Commission member  
(scientific degree, full name)

\_\_\_\_\_  
(signature)

Commission Secretary  
(scientific degree, full name)

\_\_\_\_\_  
(signature)

Author (s) \_\_\_\_\_  
(surname and initials of the author (s))

\_\_\_\_\_  
(article title)

to the article written on the subject  
**EXPERT OPINION**

*The expert commission, having considered the article “ \_\_\_\_\_  
The article should contain brief information about the content, scientific novelty,  
research materials and methods, research results and analysis indicators.*

**Reviewer:**

signature:

Secretary:

## Reviews of an article in the journal «Chemistry and Chemical Technology»

## REVIEW

Article title:	
Reviewer: Full name, academic degree and title, position	
Date:	

## Content evaluation

*Study object*

	Formulated clearly and accurately
	Should be defined more clearly
	Not clear, should be reformulated
Reviewer's comment:	

*Theoretical foundations and explanations*

	The author expresses an original point of view
	There are enough links to previous studies
	Lack of links to other studies
	The theoretical background is missing or unclear
Reviewer's comment:	

*Information and data provided*

	New, original
	Expand and supplement already known information
	Repeat already known information
	Obscure
Reviewer's comment:	

*Research method*

	Well grounded and consistent
	Insufficiently substantiated, should be reconsidered
	Method unclear
	Not required for this kind of work
Reviewer's comment:	

*Problem solving and analysis of results*

	Very well grounded
	Reasonable enough
	Poorly grounded, should be revisited
	Not clear and / or too abstract

	Descriptive work
Reviewer's comment:	

### Evaluation form

*Name*

	Clear and precise
	Should be revised
Reviewer's comment:	

*Language style*

	A great
	Free enough
	Understandable
	Hard to understand
Reviewer's comment:	

*Tables, graphs, etc.*

	Acceptable
	Should be revised
	Missing / not required
Reviewer's comment:	

*List of used literature*

	Acceptable
	Should be edited
Reviewer's comment:	

*Annotation*

	Acceptable
	Should be edited
	Should be revised
Reviewer's comment:	

### Conclusions

	Publish as provided
	Accept with minor changes
	Accept with significant changes
	Reject as it stands, but with the possibility of re-filing
	Reject without the possibility of re-filing

Reviewer's comment:	
---------------------	--



## USE OF LIGNOCELLULOSE POWDERS AS SWELLING FILLERS FOR RUBBERS

Nakyp A.M., postgraduate

abdirakym1994@mail.ru, <https://orcid.org/0000-0002-7189-9928>

Dauylbek A.A., postgraduate

aidadauylbek@gmail.com, <https://orcid.org/0000-0002-6011-8604>

Nakyp Abdolla Muratuly, master student

a\_nakyp@mail.ru, <https://orcid.org/0009-0005-5601-3016>

Nakypova S.M., master of technical sciences

nakypova.saltanat@mail.ru, <https://orcid.org/0009-0009-6833-6807>

Zharasova Zh.M., master of technical sciences

j\_a\_n\_a\_r\_1991@mail.ru, <https://orcid.org/0009-0002-2354-9138>*Kazan National Research Technological University, Kazan city, Russian Federation*

**Annotation.** Rubber sealing elements, which are limited in swelling in aqueous media, filling the space between the contacting surfaces, are widely used in the designs of packers in the oil and gas industry. The paper considers the use of porous lignocellulosic products as swelling fillers for rubbers with limited swelling.

**Keywords:** lignocellulose, swelling rubber, Na-carboxymethylcellulose, swelling filler, BNKS-28.

**Introduction.** Recently, there has been an increase in the use of plant polymers worldwide as a cheap and renewable energy source for a wide range of applications.

**Materials and methods.** The mixing of BRS with SP was carried out in a closed rubber mixer of the company Brabender (W50 E). The distribution of SP in rubber mixtures occurred without technological difficulties.

**Results and discussion.** Base rubber compounds (BR) were produced on laboratory rollers. Base rubber compounds were made on laboratory rollers. The ingredients of base rubber compounds are listed below in Table 1.

Table 1 – Basic rubber compound formulation

No.	Ingredients	Standards	wt.h
1	Rubber (BNKS-28)	TU* 38.30313-2006	100.0
2	Sulfur S	GOST** 127.4-93	1.5
3	Zinc oxide ZnO	GOST 202-84	5.0
4	Stearic acid	GOST 6484-96	1.5
5	Captax	GOST 739-74	0.8
6	Carbon black P-324	GOST 7885-86	45.0
7	Plasticizer T-92	GOST 8728-88	15.0
Total			168.8

\*Technical conditions

\*\*State Standard

**Conclusions.** It was found that the introduction of LCP-Flax into the composition of the rubber makes it possible to maintain the conditional tensile strength of the rubber at the level of the sample without the swelling filler, while the introduction of the industrial product of carboxylated cellulose Na-CMC leads to a significant decrease in the strength of the rubber.

**References:**

[1] **Khin Maung Htau**, Rifforming lignina i lignocelljuloznoj massy v jelektronno-puchkovoj plazme / Kandidatskaja dissertacija. Dolgoprudnyj. – 2020, 57 s. [in russian]

[2] **Cherezova, E. N.**, Karaseva Ju. S., Kuvshinova L. A., Udoratina A. V., Jarullin R. S., Izuchenie vlijaniya modifitsirovannyh lignocelljuloznyh poroshkov na fiziko-mehaniicheskie svojstva rezin na osnove kauchuka SKMS-30 ARKM-15 / Vestnik Kazanskogo tehnologicheskogo universiteta., – 2014. – T. 17, № 24. – S. 113-115. [in russian]

#### **Литература:**

[1] **Кхин Маунг Хтау**, Риформинг лигнина и лигноцеллюлозной массы в электронно-пучковой плазме / автореферат... канд. х. н. – Долгопрудный, 2020. – 57 с.

[2] **Черезова, Е.Н.**, Карасева Ю.С., Кувшинова Л.А., Удоратина А.В., Яруллин Р.С., Изучение влияния модифицированных лигноцеллюлозных порошков на физико-механические свойства резин на основе каучука СКМС-30 АРКМ-15 // Вестник Казанского технологического университета, – 2014. – Т. 17. - № 24. – С. 113-115.

### **ИСПОЛЬЗОВАНИЕ ЛИГНОЦЕЛЛЮЛОЗНЫХ ПОРОШКОВ В КАЧЕСТВЕ НАПОЛНИТЕЛЕЙ ДЛЯ РЕЗИН**

**Накып А.М.**, аспирант  
**Дауылбек А.А.**, аспирант  
**Накып Абдолла Муратулы**, магистрант  
**Накыпова С.М.**, магистр технических наук  
**Жарасова Ж.М.**, магистр технических наук

*ФГБОУ ВО «Казанский национальный исследовательский технологический университет»  
г. Казань, Российская Федерация*

**Аннотация.** Ограниченно набухающие в водных средах резиновые уплотнительные элементы, заполняющие пространство между соприкасающимися поверхностями, широко применяют в конструкциях пакеров в нефтегазодобывающей промышленности.

**Ключевые слова:** лигноцеллюлоза, набухающий каучук, На-карбоксиметилцеллюлоза, набухающий наполнитель, БНКС-28.

### **ЛИГНОЦЕЛЛЮЛОЗА ҰНТАҚТАРЫН РЕЗЕҢКЕ ҚҰРАМЫНА ТОЛЫҚТЫРҒЫШ РЕТІНДЕ ҚОЛДАНУ**

**Накып Ә.М.**, аспирант  
**Дауылбек А.А.**, аспирант  
**Накып Абдолла Мұратұлы**, магистрант  
**Накыпова С.М.**, техника ғылымдарының магистрі  
**Жарасова Ж.М.**, техника ғылымдарының магистрі

*«Қазан ұлттық зерттеу технологиялық университеті» федералдық мемлекеттік  
бюджеттік жоғары оқу орны, Қазан қ., Ресей Федерациясы*

**Аңдатпа.** Сулы ортада шектеулі мөлшерде ісінетін және жанасатын беттер арасындағы кеңістікті толтыратын резеңке тығыздағыш элементтер мұнай-газ өнеркәсібіндегі пакер конструкцияларында кеңінен қолданылады.

**Тірек сөздер:** лигноцеллюлоза, ісінетін каучук, На-карбоксиметилцеллюлоза, ісіну толтырғышы, БНКС-28.

**information about the authors**