WEB OF SYNERGY:
International Interdisciplinary Research Journal
Volume 2 Issue 4, Year 2023 ISSN: 2835-3013
https://univerpubl.com/index.php/synergy

Lighting and Ventilation for Teaching Rooms

Bakhriddinov Nuriddin Sadriddinovich
Dotsent of Namangan Engineering Construction Institute,
160103, Republic of Uzbekistan, Namangan, I. Karimov st.,12

Mamadaliev Adkhamjon Tukhtamirzaevich
Dotsent of Namangan Engineering Construction Institute,
160103, Republic of Uzbekistan, Namangan, I. Karimov st.,12

Article Information

Received: February 18,2023
Accepted: March 19,2023
Published: April 18,2023

Keywords *teaching rooms, room air, harmful factor, excess heat content, hazardous factor, lighting, light flow, light bulbs, conditioning system, ventilation.*

ABSTRACT

This article presents the results of the calculation of lighting and ventilation for teaching rooms, revealing the content and essence of the topic based on what lamps are selected for teaching rooms and the creation of comfortable conditions for Educational people at the expense of ventilation of rooms

It is known that production processes have a negative impact on the health of workers with the constant occurrence of some harmful or dangerous factors. That is why harmful and dangerous factors are brought to the norm in order to pay great attention to the health of the worker.

The great philosopher, Hakim Abu Ali ibn Sina (R.980-1037), has worked in the field of Medicine and, in his work "removing harm from various manipulations by correcting and warning", substantiated the decline in human performance through the negative impact of harmful factors of various manifestations on human health. Therefore, the worker was instructed that there should be no dust or sponges in the workplaces. The Thinker's opinion on maintaining working health concerns production enterprises of all directions.

Currently, the normalization of lighting and room air replacements in the labor protection process plays an important role in improving the quality of Education. When lighting is less than normal, there is excessive strain in the employee's eyes, creating fatigue. Regulatory light plays an important role in maintaining health and high working capacity.

Uz State standard 3026: 2021 in teaching rooms: based building standards and rules 3.01.05-98 "natural and artificial lighting. Design standards", sanitary rules 52.13330.2016:

SanN and R 23-05-95: it is required to comply with the requirements of "natural and artificial lighting", in addition, the lighting of the room should not be less than 300 lux.

To determine the number of lamps in the room, the light flux F is determined.

$$F=\frac{E\cdot K\cdot S\cdot Z}{n}$$

Where F is the refractive flux,(Lum); E is the normative minimum luminosity,(lk). For teachers and students in teaching rooms, E=300lk is when the gazrazryad lamp is turned on, S is the illuminated room surface, m^2; Z is usually equal to 1.1 – 1.2, compared to the average illumination; K is the Reserve coefficient, the coefficient of magnitude when the lamp in the lighting becomes dimmer, which is usually equal to 1.5.

Usually the coefficient relative to the height of the surface and ceiling of the room, that is, the coefficient indicating that the amount of these dimensions increases the number of luminaires as they increase in size:

$Y=\frac{S}{h(A+B)}$ can be found from the formula.

Where S is the building area, m^2; h is the height of the hanger, m; A is the width of the room, m; B is the length of the room, m. For example, we calculate the coefficient to be obtained with respect to the size of the room for teaching rooms with the most common size currently available S=36 m^2, h=3.39 m, A=4.9 m, B=7.35 m:

$$Y=\frac{36\ м^2}{3{,}39\ м\cdot\ (4{,}9\ м+7{,}35\ м)}=0{,}8.$$

We find the value of F on the raw data

$$F=\frac{300\cdot 1{,}5\cdot 36\cdot 1{,}1}{0{,}28}=63642{,}857\ \text{люм.}$$

For lighting, we choose a lamp of the type LB 40-1. The luminous flux of this lamp is 4320 lumens. Accordingly, the number of necessary lamps N is found by the following formula:

$$N=\frac{F}{F_n},$$

Where F is the flow of light in the room, Fn is the flow of light in the lamp of 1 unit, that is, 4320 lumens. It follows that the total number of lamps needed

$$N=\frac{63642{,}857}{4320}=15$$

The types of lighting lamps also play an important role in the maintenance of lighting fixtures. Experiments carried out showed that Ultra-violet light damages the eye curtains, reduces the ability of the eye screens to distinguish colors; red also tires the eye, prevents the separation of the color of materials; Green does not tire the eye, but when working with materials, the degree of differentiation of their color decreases, etc. The most important thing is that in the most basic place for the lighting of the workplace, lamps are chosen that are close to sunlight. Among these, dairy light bulbs are used a lot.

In the teaching rooms, ventilation (ventilation) work is carried out in order to preserve the health of the teacher taking classes and the students receiving education. Since the rooms for this are considered closed production rooms, heating and conditioning is carried out in accordance with interstate GOST 12.1.005, ISO/TR 27628, ISO 24095, ISO 21832 and GOST 12.4.021, ISO 16890-2 and ISO 16890-3 in accordance with flow-pull ventilation, building norms and rules 2.04.05.

The heating and conditioning system is carried out by directing warm, non-cold air to humans. In teaching rooms, the difference in intermediate costs between the floor and the head of the employee should not exceed 5°C. In these same areas, mostly natural ventilation is used in a Moorish-tortuous appearance. The main description of ventilation is determined by the parameter indicating how many times the air in the room is exchanged per hour.

Room bill:

V_{en} = the volume of air required for exchange, m^3.

V_{room} = working room size, m^3.

For work, we will take the following room as an example.

— the length of the room B=7,35 m ;

— width A=4,9 m;

— height H=4,2 m;

Room size $V_{room}=A \cdot B \cdot h=151,263\ m^3$ will be

$V_{en} \cdot C(t_{exit} \cdot t_{access}) \cdot y = 3600 \cdot Q_{excess}$,

Q_{excess} – amount of excess heat (BT);

C – 1000- specific heat transfer, $j/m \cdot k$;

y = 1,2- air density, mg/cm^3.

Air movement from the room:

$t_{exit}=t_{workplace}+(H\text{-}2)$ is found from the formula

Here t=1-5 degrees - the increase in the movement of the first height of the room,

$t_{и.ж}$= 25 degrees - the temperature at the workplace;

H=4,2m- room height, m;

$t_{workplace}$ - 18 degrees - the temperature of the air entering the room.

Of these

t_{exit} = 25+(4,2-2) •2= 29,4°C.

$Q_{excess} = Q_{excess1} + Q_{excess2} + Q_{excess3}$, in this Q_{excess} – the amount of heat emitted from electrical devices and lighting.

$Q_{excess1} = E \cdot P$, E- consumption of electrical energy for thermal energy (E=0,55 for lighting), P- power, Bt.

P=40 Bt · 15 = 600 Bt

$Q_{excess1}$ = 0,55 · 600 = 330 Bt.

$Q_{excess2}$ – heat from solar radiation.

$Q_{excess2} = m \cdot S \cdot K \cdot Q_{The\ sun}$,

here m – number of windows;

S- window surface,m^2,

$S=2,3 \cdot 2= 4,6\ m^2$.

K- window coefficient, for double glazing K=0,6.

$Q_{The\ sun}$ =127 Bt/m – the amount of heat entering through the window

$Q_{excess2} = 4,6 \cdot 4 \cdot 0,6 \cdot 127 = 1402$ Bt.

$Q_{excess3}$ - coming out of people heat

$Q_{excess3}$ =n · q, бу ерда q= 80 Bt/ man;

This is the heat coming from a person;

n- number of people (employee); example if there are 15 employees,

$Q_{excess} = 15 \cdot 80 = 1200$ Bt

So, Q_{excess} =330+1402+1200=2932 Bt.

The heat balance according to eq

$t_{exit} = t_{workplace} + (H-2) \cdot t$, $V_{en} = \frac{3600 \cdot 2932}{1000 \cdot (29,4-18)} = 926 м^3$.

When the air density u = 1.2

$V_{en} = \frac{3600 \cdot 2932}{1000 \cdot (29,4-18) \cdot 1,2} = 771,6 м^3$ will be

The optimal option is air conditioning, that is, automatic maintenance of the room air condition based on a certain demand (in addition to room air, regardless of room conditions).

If the above calculations for air exchange of training rooms are not performed correctly, the standard of air exchange will be violated. This can result in:

- If the air exchange is less than the norm, the level of additional cooling of the room will decrease, the computer in the room will be damaged due to heating; as a result of excessive sweating of the worker, water and necessary salt solutions in the body decrease;

- If there is more air exchange than the norm, the room will cool down, mainly the worker will catch a cold, etc.

In conclusion, it should be said that if the lighting and ventilation of the teaching rooms are calculated as indicated above, if the room is provided with regular lighting and air exchange, then comfortable conditions are created for the employees and students who work here.

References:

1. Sadriddinovich, B. N., & Axmadjanovich, T. A. (2021). Role Of Mahalla's Participation In The Development Of Education. *International Journal of Progressive Sciences and Technologies*, *25*(1), 375-378.
2. Turgunovna, A. S., Sadriddinovich, B. N., & Mahammadjanovich, S. M. (2021, April). Kinetics of decomposition of washed roasted phosphoconcentrate in hydrochloric acid. In *E-Conference Globe* (pp. 194-197).

3. Bakhriddinov, N. S. (2021). EFFECT OF EXTRACTION PHOSPHORIC ACID EVAPORATION HEAT ON POLYMERIZATION. *INFORMATION TECHNOLOGY IN INDUSTRY*, *9*(3), 842-847.
4. Sadriddinovich, B. N. (2022). BENEFITS OF LIQUID FERTILIZERS IN AGRICULTURE. *Scientific Impulse*, *1*(5), 1843-1850.
5. Mamadaliyev, A. T., & Bakhriddinov, N. S. (2022). Teaching the subject of engineering geology on the basis of new pedagogical technology. *Scientific Impulse*, *1*, 5.
6. Tukhtamirzaevich, M. A., & Gulomjonovna, Y. Y. (2022, December). Use of new pedagogical technologies in teaching the subjects of industrial sanitation and labor hygiene. In *Proceedings of International Conference on Modern Science and Scientific Studies* (Vol. 1, No. 3, pp. 378-386).
7. Tukhtamirzaevich, M. A. (2022, December). Results of laboratory-field testing of hairy seeds coated with mineral fertilizers.In *Proceedings of International Educators Conference* (Vol. 1, No. 3, pp. 528-536).
8. Tukhtamirzaevich, M. A., Karimov, I., & Sadriddinovich, B. N. (2022). TEACHING THE SUBJECT OF ENGINEERING GEOLOGY ON THE BASIS OF NEW PEDAGOGICAL TECHNOLOGY. *Scientific Impulse*, *1*(5), 1064-1072.
9. Mamadaliyev, A. T. (2022). The movement of the population when a flood happens. *Scientific Impulse*, *1*(5).
10. Mamadaliyev, A. T. (2022). Naturally occurring carbonate minerals and their uses. *Scientific Impulse*, *1*(5).
11. Sadriddinovich, B. N.(2023). Application of pedagogical technology in teaching ecological science. *PEDAGOG*, *6*(2),324-332.
12. Sadriddinovich, B. N., & Akhmadzhanovich, T. A. (2022, December). ADVANTAGE OF SEPARATING THE RESIDUE GENERATED BY THE CONCENTRATION OF THE EXTRACTABLE PHOSPHORIC ACID. In *Proceedings of International Educators Conference* (Vol. 1, No. 3, pp. 461-472).
13. Tukhtamirzaevich, M. A. (2022). FLOODING IN THE TERRITORY OF THE REPUBLIC OF UZBEKISTAN AND THE MOVEMENT OF THE POPULATION THEREIN. *Scientific Impulse*, *1*(5), 2285-2291.
14. Tukhtamirzaevich, M. A. (2022, December). Dimensions and justification of operating modes for paning device of haired cotton seeds with macro and micro fertilizers. In *International scientific-practical conference on" Modern education: problems and solutions"* (Vol. 1, No. 5).
15. Бахриддинов, Н. С. (2017). Жидкие комплексные удобрения на основе экстракционной фосфорной кислоты. *Science Time*, (5 (41)), 177-180.
16. Бахриддинов, Н. С., & Тургунов, А. А. (2022). Экстракцион фосфат кислота олиш даврида фильтрлаш даражасини ошириш. *Principal issues of scientific research and modern education*, *1*(8).
17. Бахриддинов, Н. С. (2022). Чиқиндидан фойдаланиб магний ва сульфат ионли оддий суперфосфат олиш технологияси. *principal issues of scientific research and modern education*, *1*(8).
18. Бахриддинов, Н. С., Мамадалиев, Ш. М., & Ёқубжанова, Ё. (2022). ПРАКТИЧЕСКОЕ ЗНАЧЕНИЕ ОРГАНИЗАЦИИ ЭКОЛОГИЧЕСКОГО

ОБРАЗОВАНИЯНИЯ В ДОШКОЛЬНОМ УЧРЕЖДЕНИИ. *Oriental renaissance: Innovative, educational, natural and social sciences*, *2*(5), 443-448.

19. Гафуров, К., Шамшидинов, И. Т., Арисланов, А., & Мамадалиев, А. Т. (1998). Способ получения экстракционной фосфорной кислоты. *SU Patent*, *5213*.
20. Мамадалиев, А. Т., & Мамаджанов, З. Н. Фавкулодда вазиятлар ва аҳоли муҳофазаси. *Дарслик. Тошкент*.2.
21. Bakhriddinov, N. S., & Mamadaliyev, A. T. (2022). DEVELOPMENT OF PRODUCTION OF BUILDING MATERIALS IN THE REPUBLIC OF UZBEKISTAN THROUGH INNOVATIVE ACTIVITIES. *Новости образования: исследование в XXI веке*, *1*(4).
22. Tukhtamirzaevich, M. A., & Akhmadjanovich, T. A. (2022). CAUSES OF THE OCCURRENCE OF LANDSLIDES AND MEASURES FOR ITS PREVENTION. *Scientific Impulse*, *1*(5), 2149-2156.
23. Tuxtamirzaevich, M. A., & Axmadjanovich, T. A. (2023). SUV TOSHQINI SODIR BOLGANDA AHOLINING HARAKATI. *PRINCIPAL ISSUES OF SCIENTIFIC RESEARCH AND MODERN EDUCATION*, *2*(1).
24. Бахриддинов, Н. С., Мамадалиев, Ш. М., & Джураева, Д. У. (2022). Современный Метод Защиты Озонового Слоя. *CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES*, *3*(3), 1-4.
25. Намазов, Ш. С., Бахриддинов, Н. С., Эркаев, А. У., & Абдуллаев, Б. Д. (1991).Физико-химические свойства упаренной экстракционной фосфорной кислоты из фосфоритов Центральных Кызылкумов. *Узб. хим. журн*, (1),25-28
26. Бахриддинов, Н. С. Получения жидких комплексных удобрений на основе экстракционной фосфорной кислоты из фосфоритов Центральных Кызылкумов. *Канд диссертация*, *1991*.
27. Sadriddinovich, B. N., & Tukhtamirzaevich, M. A. (2022). Development of production of building materials in the republic of uzbekistan through innovative activities. *Scientific Impulse*, *1*(4), 213-219.
28. Mamadaliev AT, T. A. (2022). Suv toshqini sodir bolganda aholining harakati. *PRINCIPAL ISSUES OF SCIENTIFIC RESEARCH AND MODERN EDUCATION*, *1*(10).
29. Росабаев, А. Т., & Мамадалиев, А. Т. (2013). старший преподаватель кафедры экологии и охраны труда Наманганского инженерно-педагогического института, г. Наманган, Республика Узбекистан. *Редакционная коллегия*, 174.
30. Baxriddinov, N., Mamadaliev, S., & Djuraeva, D. (2022). ОЛИЙ ТАЪЛИМ МУАССАСАЛАРИДА ЭКОЛОГИЯДАН ЎҚУВ МАШҒУЛОТЛАРИНИ ТАШКИЛ ЭТИШ. *Science and innovation*, *1*(B8), 10-15.
31. Бахриддинов, Н. С. (2022). Чиқиндидан фойдаланиб магний ва сульфат ионли оддий суперфосфат олиш технологияси. *PRINCIPAL ISSUES OF SCIENTIFIC RESEARCH AND MODERN EDUCATION*, *1*(8).
32. Бахриддинов, Н. С., Мамадалиев, Ш. М., & Ёқубжанова, Ё. (2022). ПРАКТИЧЕСКОЕ ЗНАЧЕНИЕ ОРГАНИЗАЦИИ ЭКОЛОГИЧЕСКОГО ОБРАЗОВАНИЯНИЯ В ДОШКОЛЬНОМ УЧРЕЖДЕНИИ. *Oriental renaissance: Innovative, educational, natural and social sciences*, *2*(5), 443-448.
33. Бахриддинов, Н. С., Абдуллаев, Б. Д., Эркаев, А. У., & Намазов, Ш. С. (1991).

Концентрированная экстракционная фосфорная кислота из фосфоритов Центральных Кызылкумов и ее физико-химические свойства. *Узб. хим. журн*, (1), 21-25.

34. Мамадалиев, А. Т., & Мухитдинов, М. Б. Доцент Наманганский инженерно-строительный института Республика Узбекистан, г. Наманган. *НАУЧНЫЙ ЭЛЕКТРОННЫЙ ЖУРНАЛ «МАТРИЦА НАУЧНОГО ПОЗНАНИЯ*, *27*.
35. Мамадалиев, А. Т. (2022, December). ИНЖЕНЕРЛИК ГЕОЛОГИЯСИ ФАНИ МАВЗУСИНИ ЯНГИ ПЕДАГОГИК ТЕХНОЛОГИЯ АСОСИДА ЎҚИТИШ. In *Proceedings of International Educators Conference* (Vol. 1, No. 3, pp. 494-504).
36. Бахриддинов, Н. С. Получения жидких комплексных удобрений на основе экстракционной фосфорной кислоты из фосфоритов Центральных Кызылкумов. *Канд диссертация*, *1991*.
37. Бахриддинов, Н. С., Эркаев, А. У. Н. Ш., & Абдуллаев, Б. Д. (1991). Экстракционная фосфорная кислота из фосфоритов Центральных Кызылкумов. *Узб. хим. журн*, (2), 65-67.
38. Sadriddinovich, B. N. (2022, December). EFFICIENT METHOD OF EXTRACTION OF PHOSPHATE ACID FROM LOCAL RAW MATERIALS. In *International scientific-practical conference on" Modern education: problems and solutions"* (Vol. 1, No. 5).
39. Axmadjanovich, M. A. T. T. A. (2022). Ko ‘chkining yuzaga kelish sabablari va uning oldini olish chora-tadbirlari. *principal issues of scientific research and modern education*, *1*(10).
40. РУз, П. IAP 03493. Способ покрытия поверхности семян сельскохозяйственных культур защитно-питательной оболочкой и устройства для его осущетсвления/К. Гафуров, А. Хожиев, АТ Росабоев, АТ Мамадалиев. *БИ–2007*, *11*.
41. Тухтақўзиев, А., Росабоев, А., Мамадалиев, А., & Имомқулов, У. (2014). Тукли чигитларни минерал ўғитлар билан қобиқловчи қурилманинг конуссимон ёйгичи параметрларини асослаш. *ФарПИ илмий-техник журнали.–Фарғона*, *2*, 46-49.
42. Бахриддинов, Н. С., Намазов, Ш. С., & Абдуллаев, Б. Д. (1991). Коррозионные свойства и стабильность жидких комплексных удобрений на основе упаренной ЭФК из Кызылкумских фосфоритов. *Деп.в ВИНИТИ*,*15*,91
43. Бахриддинов, Н. С. Жидкие комплекснқе удобрения. Copyrght 2022 Монография. Dodo Bools Indian Ocean Ltd. and Omniscrbtum S.
44. Бахриддинов, Н. С. (2005). Ғовасой гилларининг гранулометрик таҳлили натижалари. *ФарПИ илмий-техник журнали.–Фарғона.–2005*, *1*, 52-54.
45. Sadriddinovich, B. N. (2022). IMPROVEMENT OF PHYSICO-CHEMICAL PROPERTIES OF PHOSPHORIC ACIDS. *International Journal of Early Childhood Special Education*, *14*(7).
46. Мамадалиев, А. Т. (2022). Карбонатли минераллар ва уларнинг халқ хўжалигидаги аҳамияти. *PRINCIPAL ISSUES OF SCIENTIFIC RESEARCH AND MODERN EDUCATION*, *1*(10).
47. Umarov, I. I., Mukhtoraliyeva, M. A., & Mamadaliyev, A. T. (2022). Principles of training for specialties in the field of construction. *Jurnal. Актуальные научные исследования в современном мире. UKRAINA.–2022*.
48. Бахриддинов, Н. С., & Тургунов, А. А. (2022, December).

КОНЦЕНТРИРОВАНИЯ ЭКСТРАКЦИОННОЙ ФОСФОРНОЙ КИСЛОТЫ ИЗ КЫЗЫЛКУМСКИХ ФОСФОРИТОВ. In *Proceedings of International Conference on Modern Science and Scientific Studies* (Vol. 1, No. 3, pp. 410-419).

49. Бахриддинов, Н. С., & Шарафутдинова, Н. П. (2022, December). УСТАНОВЛЕНИЕ ИСПОЛЬЗОВАНИЯ ОТХОДНЫХ ГАЗОВ, ОБРАЗУЮЩИХСЯ НА ПРОИЗВОДСТВЕ. In *Proceedings of International Conference on Modern Science and Scientific Studies* (Vol. 1, No. 3, pp. 399-409).
50. Бахриддинов, Н. С., & Мамадалиев, А. Т. (2022). Преимущество отделения осадков, образующихся при концентрировании экстрагируемых фосфорных кислот. *Scientific Impulse*, *1*(5), 1083-1092.
51. ТўхтақўзиевА, Р. А., Мамадалиев, А. Тукли чигитларни қобиқлаш барабанининг параметрларини назарий асослаш. ФарПИ илмий-техник журнали. *Фарғона, 2012йм (2)*, 34-36.
52. Бахриддинов, Н. С. (2022). СУЮҚ ЎҒИТЛАРНИНГ ҚИШЛОҚ ХЎЖАЛИГИДА ФОЙДАЛАНИШ ҚУЛАЙЛИКЛАРИ. *PRINCIPAL ISSUES OF SCIENTIFIC RESEARCH AND MODERN EDUCATION*, *1*(10).
53. Бахриддинов Н., Шамшидинов И. ИССЛЕДОВАНИЕ ФАЗОВОГО СОСТАВА ОСАДКОВ, КРИСТАЛЛИЗУЮЩИХСЯ ПРИ УПАРКЕ ЭКСТРАКЦИОННОЙ ФОСФОРНОЙ КИСЛОТЫ ИЗ КЫЗЫЛКУМСКИХ ФОСФОРИТОВ. *Scientific-technical journal (STJ FerPI, ФарПИ ИТЖ, НТЖ ФерПИ) 2022,Т.26. спец.выпуск №2. 143-145*
54. Бахриддинов, Н. С. (2023). ЭКСТРАКЦИОН ФОСФАТ КИСЛОТАНИ ҚИЗИГАН ҲАВОДА КОНЦЕНТРЛАШДАН ҲОСИЛ БЎЛГАН ЧЎКМАНИ ФТОРГА ТАДҚИҚ ҚИЛИШ. *PEDAGOG*, *6*(2), 237-244.
55. Мамадалиев, А. Т., & Ахунов, Д. Б. (2023). Минералогия, кристаллография ва кристаллокимё фани мавзусини интерфаол таълим методлари асосида ўқитиш. *pedagog*, *6*(3), 63-73.
56. Мамадалиев, А. Т., & Ахунов, Д. Б. (2023). Действие населения при наводнении. *PEDAGOG*, *6*(3), 147-157.
57. Mukhtoraliyeva, M. A., Mamadaliyev, A. T., Umarov, I. I., & Sharopov, B. X. Development of technology on the basis of scientific achievements.«. *Матрица научного познания*, *28*, 4-12.
58. Мамадалиев, А. Т., & Мухторалиева, М. А. БХ Шарапов Принципы обучения специальностям в области строительства. *Научный электронный журнал «матрица научного познания*.
59. Ризаев, Б. Ш., Мамадалиев, А. Т., Фозилов, О. К., & Шаропов, Б. Ў. (2022). ПРОЧНОСТНЫЕ ХАРАКТЕРИСТИКИ ЛЕГКОГО БЕТОНА НА ПОРИСТЫХ ЗАПОЛНИТЕЛЯХ. *Universum: технические науки*, (6-3 (99)), 11-15.
60. Шамшидинов, И., Мамаджанов, З., Мамадалиев, А., & Ахунов, Д. (2014). Ангрен каолинларига термик ишлов бериш жараёнини саноат шароитида ўзлаштириш. *ФарПИ илмий-техник журнали.–Фарғона*, *4*, 78-80.
61. Ризаев, Б. Ш., Мамадалиев, А. Т., Мухитдинов, М. Б., & Одилжанов, А. З. Ў. (2022). ВЛИЯНИЕ АГРЕССИВНЫХ СРЕД НА ДОЛГОВЕЧНОСТЬ ЛЕГКОГО БЕТОНА. *Universum: технические науки*, (2-2 (95)), 47-51.
62. Ризаев, Б. Ш., Мамадалиев, А. Т., Мухторалиева, М. А., & Назирова, М. Х.

(2022). Эффективные легкие бетоны на их основе пористых заполнителей. In *Современные тенденции развития науки и мирового сообщества в эпоху цифровизации* (pp. 121-125).

63. Bakhriddinov, N. S., & Akhunov, D. B. (2023). Hazards depending on properties of dusts.