JOURNAL OF TRANSPORT

ISSUE 2, 2024 Vol. 1
ISSN: 2181-2438

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TOSHKENT DAVLAT TRANSPORT UNIVERSITETI

Tashkent state transport university

JOURNAL OF TRANSPORT

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ISSN 2181-2438

VOLUME 1, ISSUE 2

JUNE, 2024

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JOURNAL OF TRANSPORT

SCIENTIFIC-TECHNICAL AND SCIENTIFIC INNOVATION JOURNAL

VOLUME 1, ISSUE 2 JUNE, 2024

Founder of the scientific and technical journal “Journal of Transport” – Tashkent State Transport University, 100167, Republic of Uzbekistan, Tashkent, Temiryo‘lchilar str., 1, office: 465, e-mail: publication@tstu.uz.

The “Journal of Transport” publishes the most significant results of scientific and applied research carried out in universities of transport profile, as well as other higher educational institutions, research institutes, and centers of the Republic of Uzbekistan and foreign countries.

The journal is published 4 times a year and contains publications in the following main areas:

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Tashkent State Transport University had the opportunity to publish the scientific-technical and scientific innovation publication “Journal of Transport” based on the Certificate No. 1150 of the Information and Mass Communications Agency under the Administration of the President of the Republic of Uzbekistan. Articles in the journal are published in Uzbek, Russian and English languages.

CONTEXT / MUNDARIJA

Porosity properties and some properties of cement-concretes with complex modifiers

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Abstract: This article shows the methods of studying the porosity of cement stone modified by the combined effect of construction additives of various nature and hydration active mineral additives, as well as the production of products based on them.
Keywords: modifier, complex additives, cement-concrete, porosity, hydration active mineral additives.

Kompleks modifikatorli syement-betonlarining g‘ovaklilik xossalari va ba’zi xususiyatlari

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Annotatsiya: Ushbu maqolada turli xil tabiatdagi qurilish qo‘shimchalari va gidratsion faol mineral qo‘shimchalarning birgalikdagi ta’siri bilan o‘zgartirilgan syement toshining g‘ovakliligini o‘rganish usullarini hamda ular asosidagi mahsulotlarni ishlab chiqarish ko‘rsatilgan.
Keywords: Modifikator, kompleks qo‘shimchalar, syement-beton, g‘ovaklik, gidrasion faol mineral qo‘shimchalar.

1. Kirish

Turli xil tabiatdagi qurilish qo‘shimchalari va gidratsion faol mineral qo‘shimchalarning birgalikdagi ta’siri bilan o‘zgartirilgan syement toshining g‘ovakliligini o‘rganish alohida qiziqish uyg‘otadi. Bu kombinatsiya gidratasiya jarayoniga ham ta’sir ko‘rsatishga imkon beradi va gidratasiya mahsulotlari orasidagi nisbatning yo‘naltirilgan o‘zgarishiga hissa qo‘shishi va syement toshining zichligini oshirishga sezilarli ta’sir ko‘rsatadi.

Yeksperimental tadqiqotlarda Oxangaron syement zavodining M400 D0 markali portlandsyementidan foydalanilgan. Mineral to‘ldiruvchi sifatida YangiAngren IYeS dan uchuvchi kul (UK) va Toshkent quyuv-mexanika zavodining (TQMZ) po‘lat eritish chiqindilari (PECH) ishlatilgan. Sirtli faol modda sifatida, polikarboksilat superplastiklashtiruvchi (SP) POLIMIKS ishlatilgan.

Zamonaviy qurilishda yangi avlod betonlarining yuqori fizik-mexanik va ishlash xossalarini kuchaytirishda kimyoviy qo‘shimchalardan qo‘shib foydalanmasdan tasavvur qilish mumkin emas. Qurilishda bunday kompozitsiyalar va ular asosidagi mahsulotlarni ishlab chiqarish uchun reologik xususiyatlarga ta’sir qilish, strukturaning shakllanishi va havo kirish jarayonlarini nazorat qilish imkonini beradigan keng turdagi qo‘shimchalar qo‘llaniladi[1-6].

2. Tadqiqot metodikasi

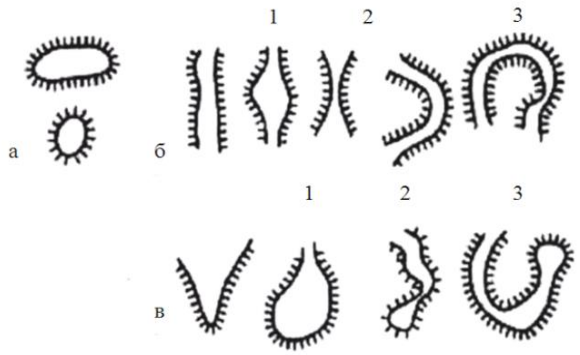
Tadqiqot o‘tkazish uchun uchta turdagi kompozisiyalarning bir qator namunalar tayyorlandi: nazorat va kompleks qo‘shimchali (1-jadval).

1-jadval

Beton qorishmasining o‘rganilganlik tarkibi

	Beton sinfi	Konus cho‘kishi, sm	Syement, kg	Maydalangan tosh, kg fr. 5-20	Qum, kg M кг =2,7	Suv, l	Zolo-unos, kg	Po‘lat ishlab chiqarish chiqindilari, kg	Superplastifikator POLIMIKS, kg
	B15	1-2	236	1220	715	190	-	-	-
	B15	1-2	201	1220	792	133	35	-	1.89
	B15	1-2	201	1220	792	133	-	35	1.89

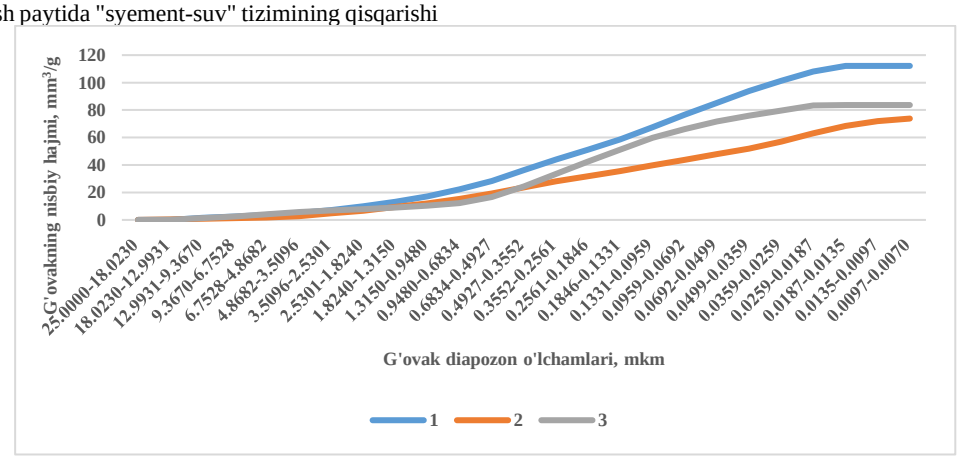
Shakliga ko‘ra syement toshidagi g‘ovaklar (1-rasm) yopiq (g‘ovaklari yumaloq va boshqa g‘ovaklardan ajratilgan), kanal hosil qiluvchi (g‘ovaklarning ikkala uchi ochiq va to‘g‘ri yoki chuvalchangsimon bo‘lishi mumkin) turlarga bo‘linadi [10-11].



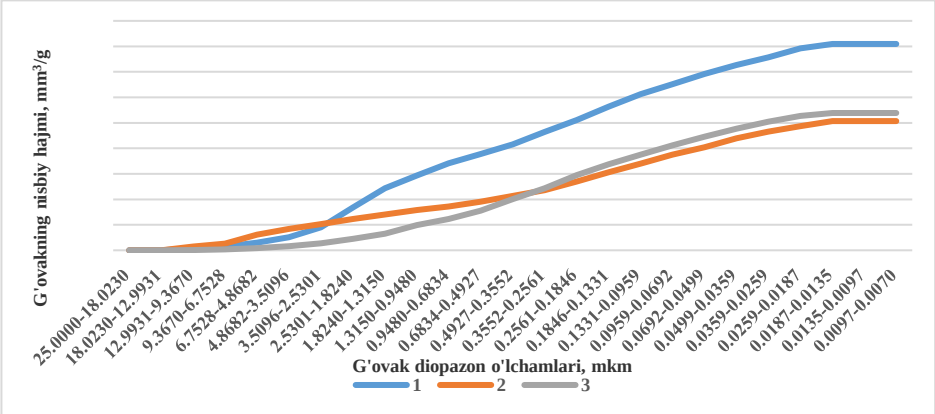
1-rasm. G‘ovaklarning asosiy shakllari (A.S.Berkman va I.G.Melnikova bo‘yicha): a-yopiq yoki chegaralangan g‘ovaklar; b-ochiq kanal hosil qiluvchi g‘ovaklarlar; v-berk g‘ovaklar; 1-tekis; 2- qurtga o‘xshash; 3- halqa shaklida

Kelib chiqishi bo‘yicha syement toshidagi g‘ovaklar havo, cho‘kindi (kapillyar, cho‘kindi) va qisqarish g‘ovaklariga bo‘linadi. Havo g‘ovaklari texnologik omillar, suvning tashqi va ichki ajralishi natijasida cho‘kish natijasida hosil bo‘ladi. Siqilish g‘ovaklari syement toshining qotish paytida "syement-suv" tizimining qisqarishi tufayli hosil bo‘ladi[1-7], qisqarish g‘ovaklari kapillyarlarga xos o‘lchamlarga ega degan taxmin mavjud.

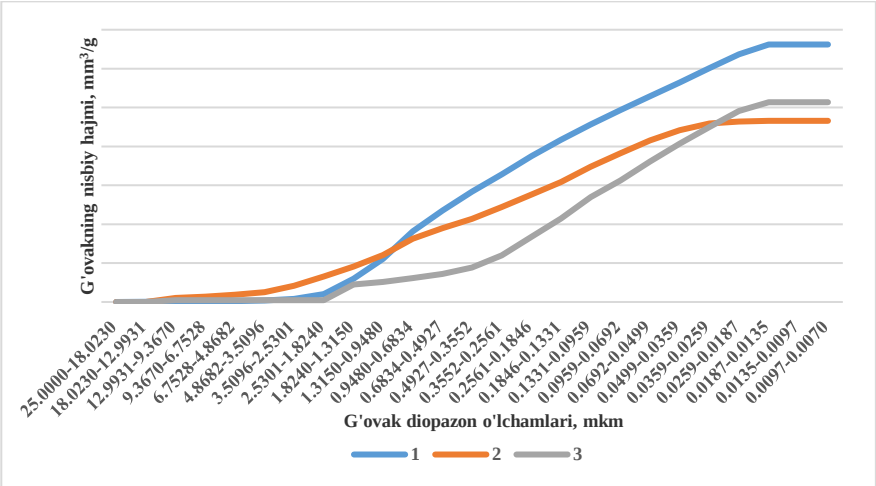
G‘ovaklar parametrlarini o‘rganish 2-4-rasmlarda ko‘rsatilgan.



Rasm-2. 3 sutkali muddatda tadbiq qilinayotgan tarkib g‘ovaklarining nisbiy hajmi: 1-nazorat; 2-ZU+SP; 3-SP+PECH

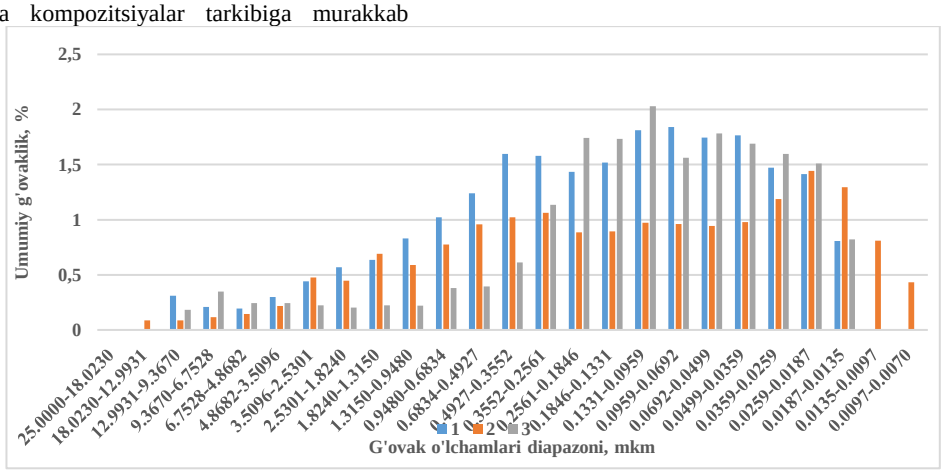


3-Rasm. 14 sutkali muddatda tadbiq qilinayotgan tarkib g‘ovaklarining nisbiy hajmi: 1-nazorat; 2-ZU+SP; 3-SP+PECH

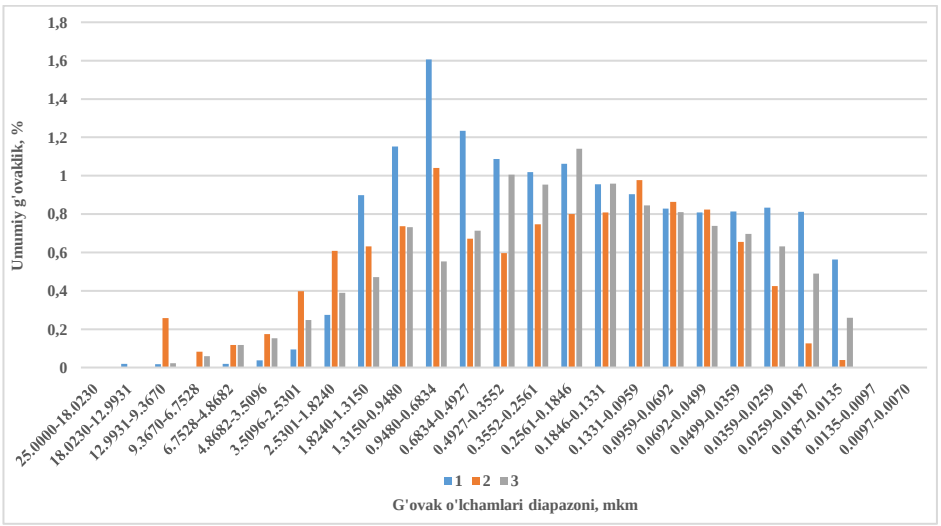


4-Rasm. 28 sutkali muddatda tadbiq qilinayotgan tarkib g‘ovaklarining nisbiy hajmi: 1-nazorat; 2-ZU+SP; 3-SP+PECH

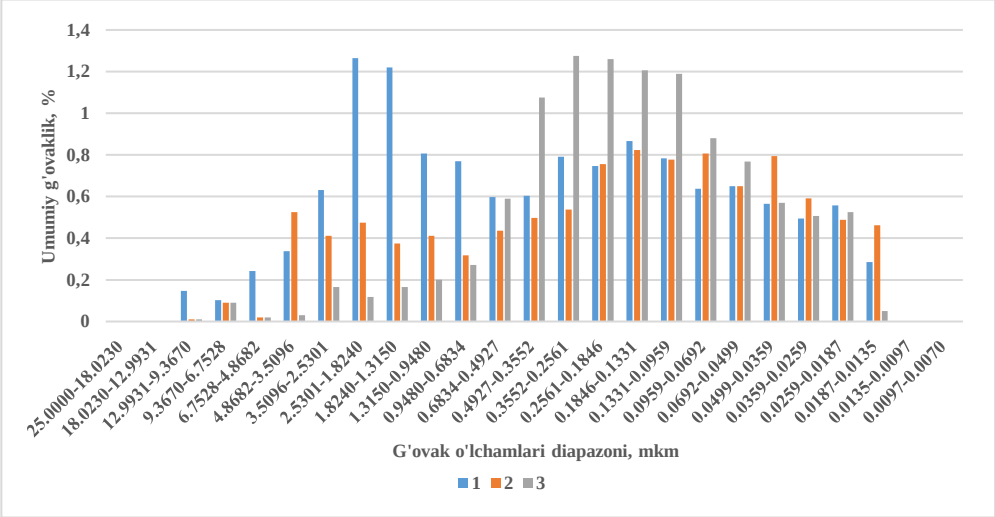
G‘ovaklarning o‘lchamlari bo‘yicha taqsimlanishini tahlil qilish (5-7-rasm) mos yozuvlar tarkibi texnologik va kapillyar teshiklarning katta mavjudligi bilan klassik tuzilishga ega ekanligini ko‘rsatdi. Integral g‘ovaklikning o‘xshash tabiatiga ega bo‘lgan murakkab modifikatorli kompozitsiyalarda kompozitsiyalar tarkibiga murakkab modifikatorni kiritish, nazorat namunaga nisbatan syement toshining umumiy g‘ovakligining 15,23 % dan 26,41 % gacha pasayishiga olib keldi. Natijada gel g‘ovaklar (0,007÷0,09 mkm), kapillyar (0,3÷10 mkm) va texnologik (≥10 mkm) g‘ovaklarning muvozanati o‘zgaradi.



5-Rasm. 3 sutkali muddatda tadbiq qilinayotgan tarkib o‘lchamlarining umumiy g‘ovakligi: 1-nazorat; 2-ZU+SP; 3-SP+PECH



6-Rasm. sutkali muddatda tadbiq qilinayotgan tarkib o‘lchamlarining umumiy g‘ovakligi: 1-nazorat; 2-ZU+SP; 3-SP+PECH



7-Rasm. 28 sutkali muddatda tadbiq qilinayotgan tarkib o‘lchamlarining umumiy g‘ovakligi: 1-nazorat; 2-ZU+SP; 3-SP+PECH

3. Xulosa

Tadqiqot natijasida olingan natijalar SP+ZU va SP+PECH asosidagi tarkiblarning kompozit betonning talab etilgan xususiyatlariga yaxshi ta’sir o‘tkazdi va natijalar gidratatsiya jarayonini borishida chuqur ahamiyat kasb etdi.

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