

**Results.** The results of studies to determine the microporosity of the composition showed that the composition with the addition of a gel polymer has a total porosity of 0.1468 - 0.1507 cm<sup>3</sup>/g. In this case, micropores with a size of 0.01-100 microns make up 35-40% of the total volume. Due to the absorption of free water by the gel polymer additives, the microporosity of the composition is reduced. As a result of curing, the carbamide composition acquires a dense and strong structure. The best porosity values are achieved with the addition of 0.13% gel polymer.

Experimental data indicate that the strength of the compositions with the gel polymer additive is higher by 10-15% in comparison with the carbamid compositions without additives.

The studies carried out also have shown, that the linear shrinkage of the control samples increases intensively in the first 1-2 days of hardening, when the resin polycondensation process takes place. During this period, the shrinkage kinetics is superimposed on the process of water evaporation from the surface, in which the molecular structure of the composition is rapidly compacted and microcracks appear in them. Intensive growth of linear deformations in urea compositions with a gel polymer additive occurs in the first 1-3 days of hardening and its value is 5-7% lower than in the control.

**Conclusion.** 1. Received urea composition with improved structure, with increased physical and mechanical properties and chemical resistance by using a gel polymer additive in an amount that provides binding of free water separation during the polycondensation of the resin.

2. Physicochemical studies have established that the addition of a gel polymer has a positive effect on the process of structure formation. The presence of chemical bonds between the components, a change in the morphology of the structure, a decrease in microporosity, an increase in the density and thermal stability of the urea composition are shown.

3. It is shown that with the optimal content of the gel polymer additives in the composition of 0.13% by the weight of the filler, the compressive strength and specific impact strength are increased to a large extent.

4. It was found that due to the strengthening of the adhesive bond between the components and the improvement of the pore structure under the action of the gel polymer additive, the chemical resistance of the urea composition with quartz filler increases.

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### PLASTIK QOPQOQLARDAN BETON BORDYUR TAYYORLASHDA DEKORATIV ELEMENT SIFATIDA FOYDALANISH

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**Annotatsiya.** Plastik suv idishi qopqoqlarini dekorativ element sifatida beton bordyurlar tayyorlashda ishlatilish imkoniyatlari tadqiq etilgan.

**Kalit so'zlar:** beton bordyur, plastik suv idishi qopqoqlari, sement, qum, chaqiq tosh.

**Аннотация.** Исследованы возможности использования крышек пластиковых бутылок в качестве декоративного элемента при изготовлении бетонных бордюров.

**Ключевые слова:** бетонный бордюр, крышки пластиковых баклажек, цемент, песок, щебень.

**Abstract.** The possibilities of using plastic bottle caps as a decorative element in the manufacture of concrete curbs are investigated.

**Key words:** concrete curb, plastic tank tops, cement, sand, crushed stone.

**Kirish.** Yuqori molekulyar polimer birikmalarni topilishi va ularni sanoat miqyosida ishlab chiqarilishi natijasida ular asosidagi materiallar iqtisodiyotning turli tarmoqlariga kirib bordi. Masalan, oziq-ovqat, mashinasozlik, qurilish va hokazo. Bu o'rinda plastmassa materiallari oilasiga mansub plastik suv idishlarni alohida ta'kidlab o'tish joiz. Mazkur plastik suv idishlar hayotimizga shu darajada kirib keldiki, ular kundalik hayotimizning ajralmas bir bo'lagiga aylanib ulgurdi. Shu bilan birga plastik suv idishlardan keng miqyosda foydalanish yangi turdagi chiqindilarni paydo bo'lishiga va atrof-muhitni ifloslanishiga sababchi bo'lib kelmoqda. Ushbu muammolar yechimi yuzasidan qator takliflar va ularni amalga oshirish borasida bajarilayotgan ijobiy ishlarga qaramasdan hali hanuz muammo to'lig'icha oxirigacha hal etilmay kelmoqda.

Plastik suv idishlarning deyarli barchasi chiqindixonalarga chiqarib tashlanadi. Internet tarmog'ida plastik suv idishlardan unumli foydalanish bo'yicha turli xildagi layf xak videolar mavjud. Mana masalan, plastik suv idishlardan oshxonada voronkasi, xokandoz, ko'chat uchun gul tuvak, qalamdon va hokazolar sifatida foydalanish tavsiya etilgan. Bular orasida plastik suv idishi qopqoqlaridan dekorativ, ya'ni pardozpob element sifatida foydalanish alohida o'rin tutadi. Bunga sabab esa plastik suv idishi qopqoqlarining turli xil ranglarda ishlab chiqarilishi xisoblanadi.

Yuqoridagilarni inobatga olgan holda plastik suv idishi qopqoqlaridan qurilish materiallarini ishlab chiqarishda dekorativ element sifatida foydalanish dolzarb ahamiyatga ega. Plastik suv idish qopqoqlaridan dekorativ element sifatida foydalanish mumkin bo'lgan qurilish buyumlaridan biri – bu beton bordyurlar xisoblanadi. Beton bordyurlar avtomobil va piyodalar yo'laklarini ajratish uchun ishlatiladigan qurilish material bo'lib xizmat qiladi. Ularning turli xil ranglarga bo'yalganlaridan maktabgacha ta'lim muassasalarini xovlilarida va istirohat-ma'daniyat bog'larida foydalaniladi. Har yili beton bordyurlarni ustki qismini bo'yash ishlari uchun qanchadan-qancha pul mablag'lari sarflanadi. Respublikamiz yo'llaridagi beton bordyurlarining aksariyat qismi oq va qora ranglarga bo'yaladi.



*Rasm-1. Amaliyotda qo'llanilayotgan bordyurlar*

Mazkur tadqiqot ishidan maqsad – bu plastik suv idish qopqoqlaridan beton bordyurlarini ustki qismini qoplashda dekorativ element sifatida foydalanish istiqbollari va imkoniyatlarini tadqiq etish.

**Xomashyo komponentlari.** Eksperimental ishlarni bajarish uchun laboratoriya sharoitlarida beton bordyur tayyorlash uchun kichraytirilgan o'lchamdagi qolip tayyorlandi. Xomashyolar sifatida esa sement, qum, chaqiq tosh va plastik suv idishi qopqoqlaridan foydalanildi. Sement sifatida CEM II / A-K 32,5 H mustahkamlik klassidagi bog'lovchisidan foydalanildi (MChJ "RECO SEMENT SIFAT", Andijon viloyati). Beton qorishmasi oldin quruq aralashma holatida aralashtirib, so'ng suv solinib bilan kerakli plastiklikgacha aralashtirib tayyorlandi.



Rasm-2. Bordjur uchun qolip va plastik suv idish qopqoqlar

**Tadqiqot natijalari va ularning muhokamasi.** Laboratoriya sharoitlarida 2 turdagi bordjur tayyorlandi: hozirgi kunda amaliyotda ishlatilayotgan bordjur va ustki qismi plastik qopqoqlar bilan qoplangan bordyurlar. Tayyorlangan beton bordyurlar normal sharoitlarda saqlandi.

Olingan natijalar plastik suv idishi qopqoqlaridan beton bordyurlar tayyorlash imkoniyatlari mavjudligi va bu holatda ularning dekorativ xossalarini ortishini ko'rsatdi. Oq rangli qopqoqlardan foydalanilganda ularni oq rangga bo'yash talab qilinmasligi esa ushbu bordyurlarning yana bir yutuqli taraflaridan biri ekanligi xisoblanadi. Shu bilan birga qizil, ko'k, yashil tusdagi kabi qopqoqlardan foydalanib xiyobon, istirohat bog'lari, dam olish maskanlari va maktabgacha ta'lim muassasa (bog'cha) lari uchun beton bordyurlar tayyorlash mumkinligi muhim ahamiyatga ega.



Rasm-3. Oddiy va plastik suv idish qopqoqli bordjur

**Xulosa.** Shunday qilib, plastmassa suv idishi qopqoqlaridan beton bordyurlar tayyorlashda foydalanish va ularning dekorativ xossalari oshishi mumkin ekanligi laboratoriya sharoitlarida olib borilgan tadqiqotlar natijalari asosida o'z tasdig'ini topdi.

#### Foydalanilgan adabiyotlar ro'yxati

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