ABZ·1 GROUP

Features of the production colored asphalt concrete mixtures with B2color

ABZ-1 GROUP business profile

Areas of activity:

- Infrastructure development (PPP projects)
- General contracting and engineering in construction
- Construction, reconstruction and repair of transport infrastructure facilities
- Production of road materials
- Research and innovation activities

Key operational metrics:

>1,7	million tons per year	Production of asphalt concrete mixtures
> 4	million square meters per year	Construction of road surfaces
>150	objects per year	Transport infrastructure facilities

Colored road surfaces are a global trend

Superkilen Public Space

Denmark, Copenhagen

Bike lane in the city center

New Zealand, Auckland

Transparent polymeric binder B2color

B2color™ is the trademark of the Russian patented transparent polymeric binder (TPB) with the in-house original formula developed by the Research Center of AO “ABZ-1” (trademark №719435).

Transparent polymeric binder is used in the production of the colored asphalt concrete for:

- designation of special areas that require greater attention of all road users (bike lanes, stops, etc.);
- production of light pavement in dark structures (tunnels, underground parking lots, etc.) for the purpose of energy efficiency of facilities;
- solving of the aesthetic tasks of the architects and designers in the organization of pedestrian and bicycle paths, driveways, other areas (roller skating, patios, etc.) in public spaces, parks, private commercial residential and industrial facilities.

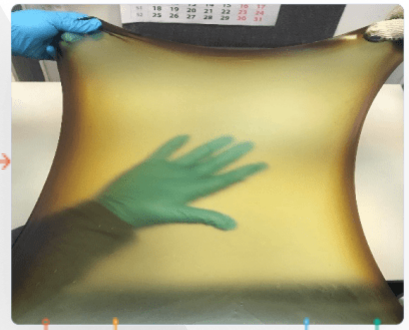




Transparent polymer binder to produce colored asphalt

B2color

By adding pigments, we can manufacture asphalt in all rainbow colors



Transparent polymer binder

Is used as traditional oil bitumen

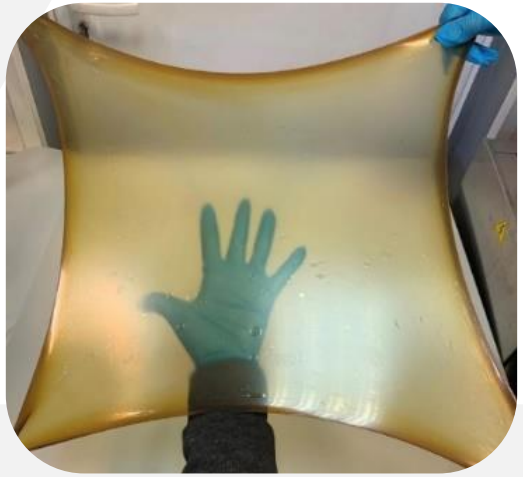
Bitumen, SDS

Benefits of transparent binder implementation

Additional source of revenue for the plant worldwide

Extension of the product range

Production and sales



B2color areas of use

ABZ·1 GROUP

Colored asphalt with B2color

Public transport stops

- Bus, trolleybus, tramway, etc.
- Pedestrian crosswalks

Sidewalks

- Sidewalks and walkways in parks and squares
- Sidewalks and walkways in residential areas

Yards and playgrounds

- Pedestrian walkways
- Sports fields
- Townhouse villages

Roads, bridges, tunnels

- Bus lanes
- Light and reflective coatings in tunnels

Parking

- Parking lots above and underground
- Certain parking spaces and parking lots

Cycle and roller lanes

- On a reserved route, in the parks
- Within the city for safety

Manufacturing colored asphalt

1. Bright color palette

Transparent polymer binder

B2color

+

Pigment

+

Stone materials

=

Colored asphalt

2. Muted colors close to natural (ECO-style)

Transparent polymer binder

B2color

+

Stone materials

=

Pigment-free coating (natural stone color)

Transparent polymer binder to produce colored asphalt

РОССИЙСКАЯ ФЕДЕРАЦИЯ

ПАТЕНТ

НА ИЗОБРЕТЕНИЕ

№ 2620120

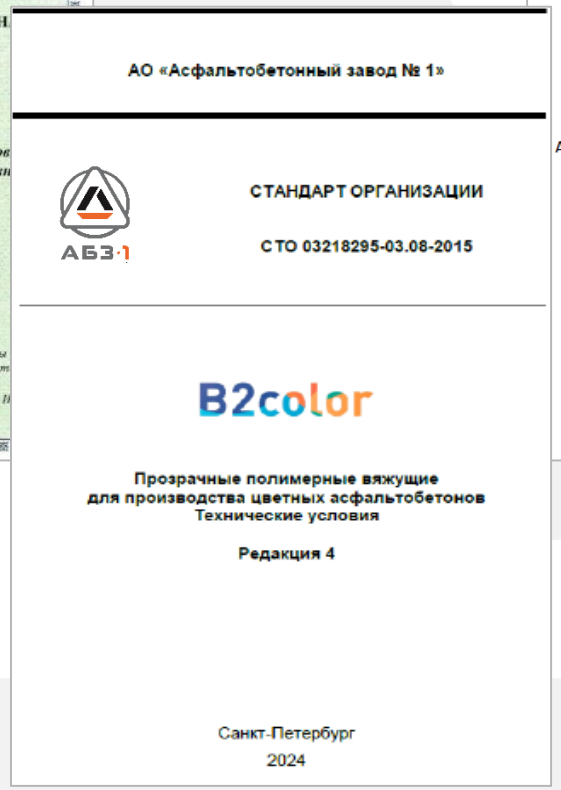
ВЯЖУЩЕЕ ДЛЯ ЦВЕТНОГО АСФАЛЬТОБЕТОН

Патентообладатель: *Открытое акционерное общество "Асфальтобетонный завод N 1" (RU)*

Авторы: *Калинин Михаил Владимирович (RU), Майданов Наталья Васильевна (RU), Романенко Юлия Николаевн (RU), Фомин Сергей Николаевич (RU)*

Заявка № 2016121374
Приоритет изобретения 30 мая 2016 г.
Дата государственной регистрации в Государственном реестре изобретений Российской Федерации 23 мая 2017 г.
Срок действия исключительного права на изобретение истекает 30 мая 2036 г.

Руководитель Федеральной службы по интеллектуальной собственност



АО «Асфальтобетонный завод № 1»

АБЗ·1

СТАНДАРТ ОРГАНИЗАЦИИ

СТО 03218295-03.08-2015

B2color

Прозрачные полимерные вяжущие для производства цветных асфальтобетонов Технические условия

Редакция 4

Санкт-Петербург

2024

АО «Асфальтобетонный завод № 1»

АБЗ·1

СТАНДАРТ ОРГАНИЗАЦИИ

СТО 03218295-03.12-2023

УСТРОЙСТВО ВЕРХНЕГО СЛОЯ ПОКРЫТИЯ ИЗ АСФАЛЬТОБЕТОННЫХ СМЕСЕЙ НА ПРОЗРАЧНОМ ВЯЖУЩЕМ «B2color»

Редакция 1

Санкт-Петербург

2023

RUSSIAN FEDERATION

№ 0164188

СИСТЕМА ДОБРОВОЛЬНОЙ СЕРТИФИКАЦИИ «ПРОМТЕХСТАНДАРТ»

№РОСС RU.32001.04ИБФ1 в едином реестре зарегистрированных систем добровольной сертификации ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО ТЕХНИЧЕСКОМУ РЕГУЛИРОВАНИЮ И МЕТРОЛОГИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

Регистрационный номер РОСС RU.32001.04ИБФ1.ОСП28.51647

Срок действия с 27.04.2024 по 26.04.2027

ОРГАН ПО СЕРТИФИКАЦИИ № РОСС RU.32001.04ИБФ1.ОСП28, Общество с ограниченной ответственностью "Прогресс", Россия, 115191, г. Москва, вн.тер.г. муниципальный округ Донской, переулок Духовской, д. 17, стр. 15, пом. 11н/2, ИНН: 7733398635, ОГРН: 1227700834613, email: progress.reestr@yandex.ru

ПРОДУКЦИЯ Прозрачные полимерные вяжущие для производства цветных асфальтобетонов «B2color». Серийный выпуск.

код ОК 20.59.59.00

СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ СТО 03218295-03.08-2015.

код ТН ВЭД 3807009000

ИЗГОТОВИТЕЛЬ Акционерное общество «Асфальтобетонный завод № 1», Адрес: Россия, 195009, г. Санкт-Петербург, Арсенальная ул., д. 66, ИНН: 7804016807, ОГРН: 1027802506742, телефон: 8 (812) 542-39-79, электронная почта: abz-1@abz-1.ru

СЕРТИФИКАТ ВЫДАН Акционерное общество «Асфальтобетонный завод № 1», Адрес: Россия, 195009, г. Санкт-Петербург, Арсенальная ул., д. 66, ИНН: 7804016807, ОГРН: 1027802506742, телефон: 8 (812) 542-39-79, электронная почта: abz-1@abz-1.ru

НА ОСНОВАНИИ Протокол испытаний (исследований) №46868-ПРГ/24 от 26.04.2024, Испытательная лаборатория ООО «Прогресс», аттестат аккредитации №РОСС RU.32001.04ИБФ1.ИЛ58 от 2022-12-09

ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ Схема сертификации: 2с (ГОСТ Р 53603-2020. Оценка соответствия. Схемы сертификации продукции в Российской Федерации).

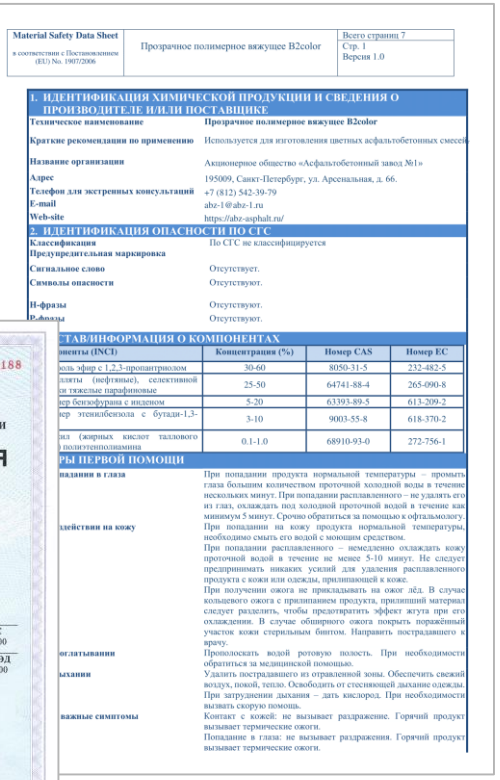
Проверка подлинности сертификата соответствия

Руководитель органа по сертификации — подпись — В.Н. Манохин (инициалы, фамилия)

Эксперт — подпись — А.П. Бахтин (инициалы, фамилия)

ПРОГРЕСС

Сертификат не применяется при обязательной сертификации



Material Safety Data Sheet в соответствии с Постановлением (ЕС) No. 1907/2006	Прозрачное полимерное вяжущее B2color	Всего страниц 7 Стр. 1 Версия 1.0

1. ИДЕНТИФИКАЦИЯ ХИМИЧЕСКОЙ ПРОДУКЦИИ И СВЕДЕНИЯ О ПРОИЗВОДИТЕЛЕ И/ИЛИ ПОСТАВЩИКЕ

Техническое наименование	**Прозрачное полимерное вяжущее B2color**
Краткие рекомендации по применению	Используется для изготовления цветных асфальтобетонных смесей
Название организации	Акционерное общество «Асфальтобетонный завод №1»
Адрес	195009, Санкт-Петербург, ул. Арсенальная, д. 66.
Телефон для экстренных консультаций	+7 (812) 542-39-79
E-mail	abz-1@abz-1.ru
Web-site	https://abz-asphalt.ru/

2. ИДЕНТИФИКАЦИЯ ОПАСНОСТИ ПО СГС

Классификация	По СГС не классифицируется
Предупредительная маркировка	
Сигнальное слово	Отсутствует.
Символы опасности	Отсутствуют.
Н-фразы	Отсутствуют.
Р-фразы	Отсутствуют.

СТАВ/ИНФОРМАЦИЯ О КОМПОНЕНТАХ

нты (INCI)	Концентрация (%)	Номер CAS	Номер ЕС
оль эфир с 1,2,3-пропантриолом	30-60	8050-31-5	232-482-5
латы (нефтяные), селективной и тяжелые парафиновые	25-50	64741-88-4	265-090-8
ер бензофурана с инденом	5-20	63393-89-5	613-209-2
ер этенилбензола с бутади-1,3-	3-10	9003-55-8	618-370-2
ил (жирных кислот таллового полиэтенполиамина	0.1-1.0	68910-93-0	272-756-1

РЫ ПЕРВОЙ ПОМОЩИ

падании в глаза	При попадании продукта нормальной температуры – промыть глаза большим количеством проточной холодной воды в течение нескольких минут. При попадании расплавленного - не удалять его из глаз, охлаждать под холодной проточной водой в течение как минимум 5 минут. Срочно обратиться за помощью к офтальмологу.
здействии на кожу	При попадании на кожу продукта нормальной температуры, необходимо смыть его водой с моющим средством. При попадании расплавленного – немедленно охлаждать кожу проточной водой в течение не менее 5-10 минут. Не следует предпринимать никаких усилий для удаления расплавленного продукта с кожи или одежды, прилипающей к коже. При получении ожога не прикладывать на ожог лёд. В случае кольцевого ожога с прилипанием продукта, прилипший материал следует разделить, чтобы предотвратить эффект жгута при его охлаждении. В случае обширного ожога покрыть поражённый участок кожи стерильным бинтом. Направить пострадавшего к врачу.
оглатывании	Прополоскать водой ротовую полость. При необходимости обратиться за медицинской помощью.
ыхании	Удалить пострадавшего из отравленной зоны. Обеспечить свежий воздух, покой, тепло. Освободить от стесняющей дыхание одежды. При затруднении дыхания – дать кислород. При необходимости вызвать скорую помощь.
важные симптомы	Контакт с кожей: не вызывает раздражение. Горячий продукт вызывает термические ожоги. Попадание в глаза: не вызывает раздражения. Горячий продукт вызывает термические ожоги.

Characteristics of B2color

B2color™ TPB is a mixture of oils, resins, polymers, and additives.

The qualitative characteristics of the B2color transparent polymeric binder were proven to be **equivalent in their values to traditional bituminous binders** and can be used in the composition of types of asphalt concrete mixtures according to GOST 9128, GOST 31015, GOST R 54401, 58406.1, 58406.2, which makes it possible to comply with all the requirements laid down in the road pavement project documentation **to loads, climatic zones, and other operating conditions.**

B2color™ is the only transparent polymeric binder in Russia adapted to all climatic zones of the country: from the Arctic to the subtropics

Characteristics of B2color

Classification of B2color transparent polymeric binder by brand marks depending on the value of penetration index (depth of needle penetration) at the temperature of 25°C.

Brand mark	Penetration at the temperature of 25°C, 0.1mm
B2color 100/130	101-130
B2color 70/100	71-100
B2color 50/70	51-70

The maximum warranty shelf life of B2color™ TPB at the temperature of 155°C is 3 days, subject to all the requirements to storage and transportation are met.

In solid form, in closed containers, the maximum shelf life of B2color™ TPB is 12 months from the date of manufacture.

Delivery capabilities

Bitutainer

1. For lease
2. Does not require purchasing of additional equipment for heating and storage of B2Color™ TPB
3. Volume – 24 m^3, electric heating – 15 kW capacity
4. Mixing is carried out by the circulator (customer's pump)
5. Connection to the ACS is considered individually after the provision of the bitumen supply line diagram by the customer. In the original version, a container with a ball valve with a camlock connector is provided.

200 L barrel

1. Is included in the cost of TPB
2. Requires the purchase of additional equipment for barrel heating, pouring from the barrel into a storage tank, pumping from the storage tank into a tank with agitators
3. Heating with silicone belts or in standard smelt furnaces

Project roadmap – colored asphalt concrete using B2color

ABZ·1 GROUP

Requirement

2 weeks

- Contacting ABZ-1
- Capturing the needs
- Recommendations and advice

Calculation

- Formation of a commercial offer
- Pigment suppliers
- Consultation on the selection of the composition
- Selection of the mixture in the laboratory of ABZ-1

Selection of samples and formulations

1-2 months

- B2color samples
- Consultation on the selection of a formulation in the laboratory and at the manufacturer's factory
- Approval and coordination of compositions

Preparing for release

- B2color delivery
- Supply of pigments
- Manufacturer and contractor consultation

Production and installation

1-2 days

- Consultation in the production process
- Consultation during the installation process
- Operation consultation

See the next slide for more details

Project roadmap – colored asphalt concrete using B2color

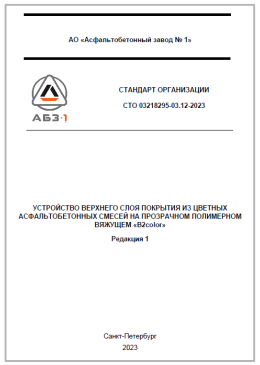
B2color delivery

Supply of pigments

Reliable trusted supplier

Manufacturer's consultation

- Automatic control system of cyclic action
- Cleaning the automated control system with hot rubble
- Availability of a clean container for B2color



АО «Асфальтобетонный завод № 1»

СТАНДАРТ ОРГАНИЗАЦИИ

СТО 03218295-03.12-2023

УСТРОЙСТВО ВЕРХНЕГО СЛОЯ ПОКРЫТИЯ ИЗ ЦВЕТНЫХ АСФАЛЬТОБЕТОННЫХ СМЕСЕЙ НА ПРОЗРАЧНОМ ПОЛИМЕРНОМ ВЯЖУЩЕМ «B2color»

Редакция 1

Санкт-Петербург

2023

Contractor's consultation

- Roller treatment with soap solution
- Use of smooth-rolling rollers only

Recommendations for design and selection of the type of colored asphalt concrete mix

ABZ·1 GROUP

Top layer of colored asphalt concrete:

Construction layers	Passways	Sidewalks/bike paths/pedestrian paths*
Top layer (colored asphalt concrete)	According to GOST R 58406.2: - for dedicated lanes of the roadway: A8VL, A11VL, A22VT, A16VT, A16VN. According to GOST R 58406.1: - for dedicated lanes of the roadway: SMA-16, SMA-11, SMA-8.	According to GOST R 58406.2: - for sidewalks and pedestrian paths: A8VL, A5VL, A11VN; According to GOST R 58406.1: - for dedicated pedestrian paths: SMA-16, SMA-11, SMA-8; Cast asphalt concrete according to GOST 54401: - for sidewalks, pedestrian paths, operated roofs of buildings and structures: LA11n, LA8n, LA8l, LA4l.

***It is important to design bicycle paths for frost resistance: the permissible winter swelling of the coating must not exceed 2 cm.**

Recommendations for design and selection of mix type

Road structures with coatings made of colored asphalt concrete are widely used when landscaping areas for the construction of driveways, pedestrian and bicycle paths, and courtyard areas.

Structural underlying layers of road pavements :

Structural layers	Passways	Sidewalks/bike paths/pedestrian paths*
Bottom layer (black asphalt concrete)	It is recommended to use mixes of A32NL or A22NL type. The type is selected based on the required pavement load	It is recommended to use a mix of A5NL type (dense asphalt concrete)
Layer of the load-bearing base	It is recommended to use SSM S4 (S6) or a crushed stone base using the wedging method (a crushed stone base without wedging is not allowed). According to calculations, one of the base layers can be a layer of asphalt concrete (A320L)	It is recommended to use SSM or crushed stone base using the wedging method
Additional layer of base	Additional base layer: sand GOST 8736-2014 K at least 2 m/day.	Additional base layer: sand GOST 8736-2014, 3284. Sand filtration coefficient - according to calculation, but not less than 2 m/day.

***It is important to design bicycle paths for frost resistance: the permissible winter swelling of the coating must not exceed 2 cm.**

Technological features of the production of color mixes

Features of the release of mixtures:

1. The production of colored asphalt concrete mixes is possible only using **a cyclic automatic control system**
2. Release performance: **35-45%** of the nominal performance of the automated control system

- Preparation of raw materials and automated control system: heating of the binder in a supply container to a temperature of 140-150°C (2-3 days)
- pigment preparation:
- cleaning the ASU mixer from the remains of traditional black mixtures and bitumen pipelines
- checking and cleaning pigment input units:
- cleaning of “cold” pre-dosing bins

4. The dump truck body must be treated only with a soap solution.
5. The mix is shipped directly to the dump truck body, or through a “zero” bunker to the kocher.
6. Colored asphalt concrete mix must be laid immediately (without storage in bunkers).

It takes at least 2 hours to prepare the automated control system

Technological features of the production of color mixes

The construction of pavements from coloured asphalt concrete mixes is similar to the construction of pavements from traditional mixes using a polymer-bitumen binder

Basic requirements and recommendations that must be met to ensure the durability of coatings made from color mixtures:

1. All special equipment must be clean.
2. To ensure anti-adhesive properties, special equipment is treated with a soap solution.
3. Road workers must use clean tools and wear clean shoes.
4. The pavements made from compacted mixtures, must be rolled only using smooth rollers to avoid sticking of some of the pigment.
5. Paving of the top layer of pavement made of a colored mix should be performed only on a prepared base or asphalt concrete pavement with mandatory priming in accordance with the requirements of SP 78.13330.2012 and SP 82.13330.2016 to ensure the required adhesion between layers.
6. To construct coatings from compacted mixtures using manual laying, mixtures of type G (according to GOST 9128), A5VI (GOST R58406.2), SP-4 (GOST R 58401.1) must be used to prevent fractional segregation on the pavement.
7. Rolling of mixtures should be carried out in the range: 155°C (beginning of rolling) - 65°C (end of rolling)
8. To achieve the required rolling coefficient of compacted mixtures, the thickness of the layer in the compacted state must be 2.5 times greater than the maximum fraction of crushed stone, but not less than 4 cm.

Instruction for working with TPB in ACS

1. How to drain TPB from a barrel into a container?

It depends on the capabilities and equipment of the production site. One of the options is to heat a container (a barrel) to 100 degrees and pour it into a specially made container by gravity, from where to pump into transparent polymeric binder container in ACS.

2. What kind of container is needed and where to buy it?

A container is similar to a container for polymeric bituminous binder, equipped with temperature maintenance system and mixing (or circulation) system.

3. What should be adjusted to the unit for pigment dosage?

It all depends on the ACS configuration. There may be many options. The pigment is fed directly into the ACS mixer. It is possible to feed similarly to the mineral powder, or perhaps by analogy with the input unit of a stabilizing agent.

4. What is the minimum amount of TPB required for a complete production cycle of a color mixture batch (let's say 25 tons)?

The amount will depend on the content of the binder in the mixture planned for release. In addition, a binder must be fed to flush the bitumen line if this line is used for conventional binder. The recommended amount is equal to the amount of a binder required for three batches of asphalt concrete mixture.

Instruction for working with TPB in ACS

5. How to clean ACS (all units and time for cleaning before production)?

Mixer cleaning – with hot crushed stone.

Mixer leaves cleaning –with hot crushed stone, manually.

Charging skip cleaning (if direct charge is impossible) – with hot crushed stone, manually.

Discharge of the colored mixture through the finished product storage bunker is not recommended.

Cleaning time is individual for each ACS.

It is important to exclude entry of conventional mixture residues in the colored mixture.

6. What is the temperature of colored mixture production?

The mixture temperature is equal to the temperature of conventional mixtures produced with the use of modified binders.

7. At what time the pigment is dosed?

Together with mineral powder, before binder feeding.

8. What is the mixing time?

Particular for each ACS. Trial output is necessary.

9. Should the unit be cleaned after production of colored mixture?

Recommended.

Instruction for working with the colored mixture

- Temperature of a asphalt concrete mixture output is **not higher than 170°C** (depends on mixture type);
- Transportation in **cleaned** transport bodies;
- Laying with the use of **cleaned equipment** (it is desirable to add a soapy solution to the road roller);
- **Structure of pavements** from a colored compactible asphalt concrete mixture **is similar** to the structure of pavements from traditional compactible mixtures on the basis of a polymer-bitumen binder;
- Hermetic sealing of longitudinal and transverse joints of the pavement, mastic for lubrication of joints should be **colorless or of asphalt concrete color**;
- After laying, the surface of the pavement has a darker shade, **which brightens after complete cooling**;
- There may be cases of whitish hue after compaction, which disappears after a few weeks;
- It is not recommended to use solvents for the colored pavement cleaning, as this may lead to **deterioration of the properties** of the colored asphalt pavement;
- For better color retention, **frequent wet cleaning** with soapy solution and traffic control (acceleration/deceleration and overall flow rate limitation) are necessary.

Demand

State customers:

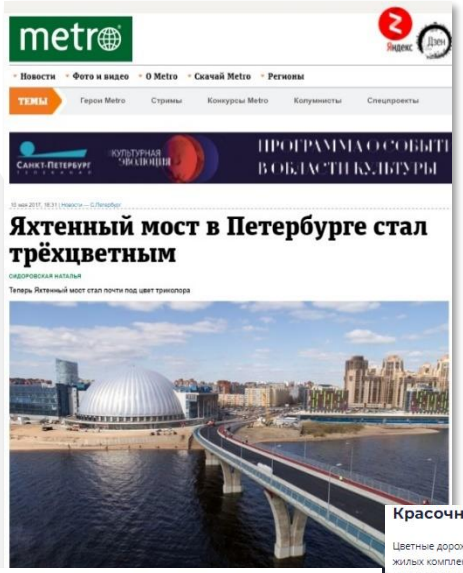
- State programs for creation of comfortable urban environment (yard areas, public spaces, parks, squares, bicycle paths, embankments);
- Development of bicycle road nets in cities and regions;
- Improvement of estimation of the urban environment quality index by the Ministry of Construction of the Russian Federation.

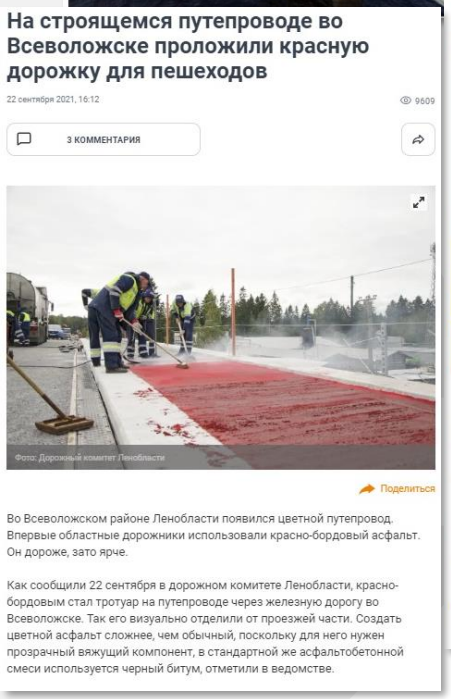
Commercial customers:

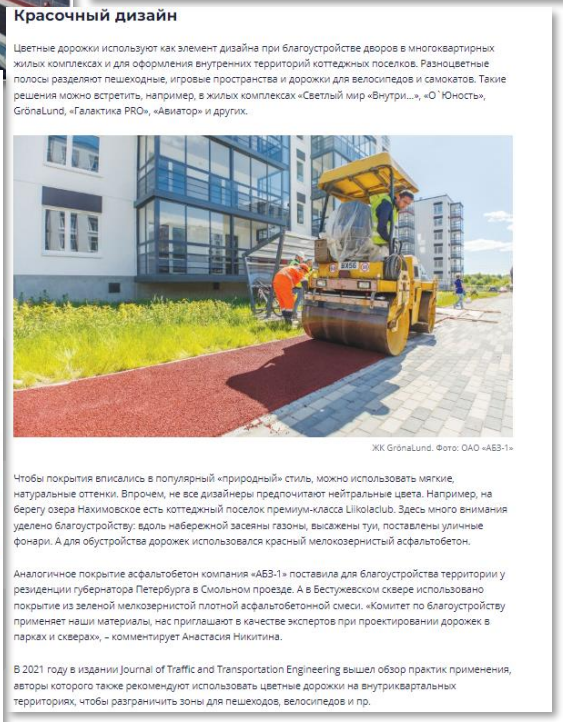
- Housing companies;
- Cottage settlements;
- Public and industrial facilities.

On demand

- Organization of material (colored asphalt concrete) presentation to the interested customers







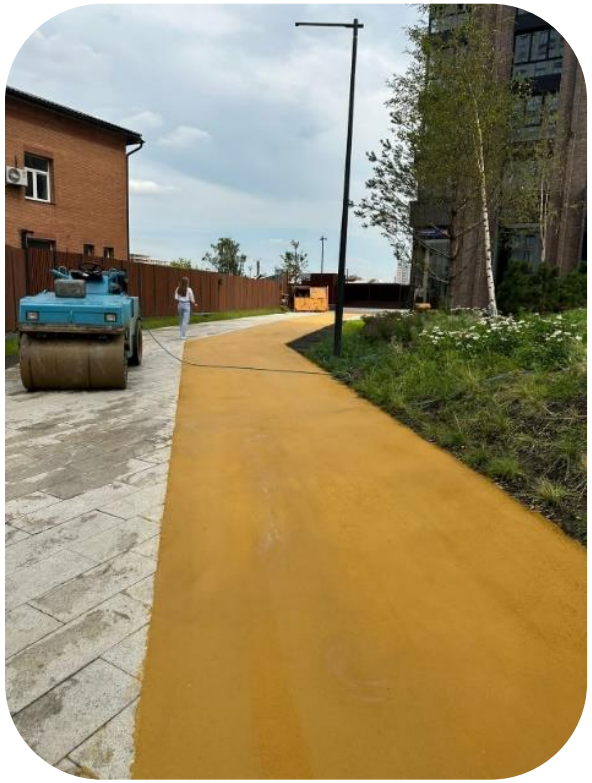
Successful implementation technology of production colored asphalt concrete mixtures in the regions

with the technical support of the specialists JSC "ABZ-1"

Moscow

The plant JSC «ARSP»
Cooperation since 2019

Square «Boulevard of flowers»
2023



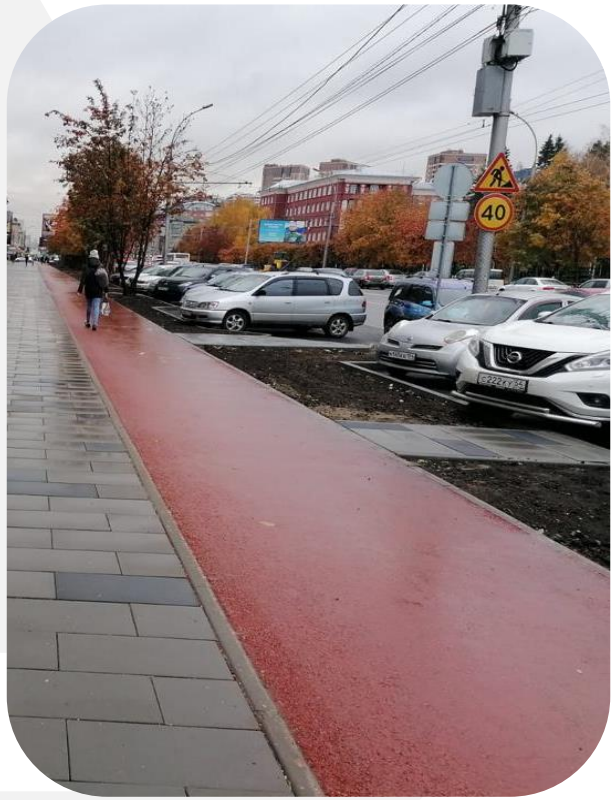
Residential complex
«Paveletskaya City»
2023

Successful implementation technology of production colored asphalt concrete mixtures in the regions

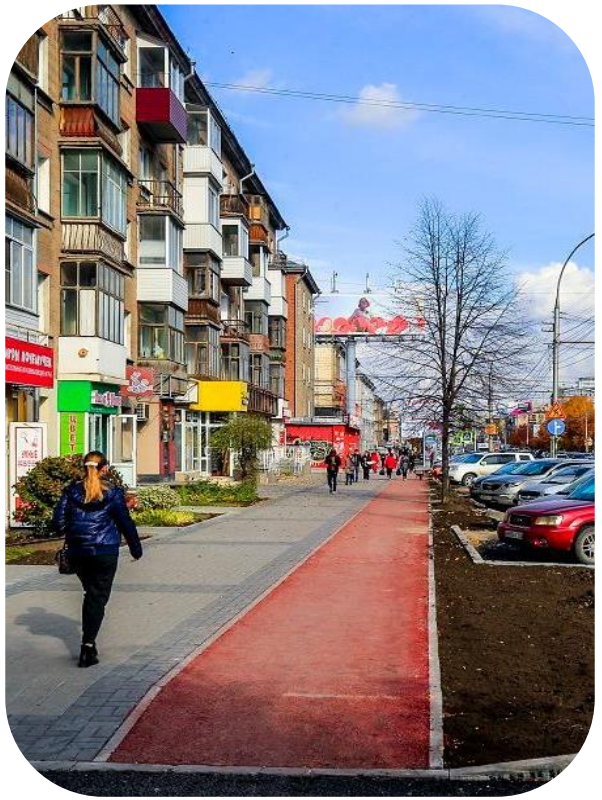
with the technical support of the specialists JSC "ABZ-1"

Novosibirsk

The plant LLC «Dorsib Plus»
Cooperation since 2022



Bike path in Akademgorodok 2022



Continuation of the bike path 2023

Successful implementation technology of production colored asphalt concrete mixtures in the regions

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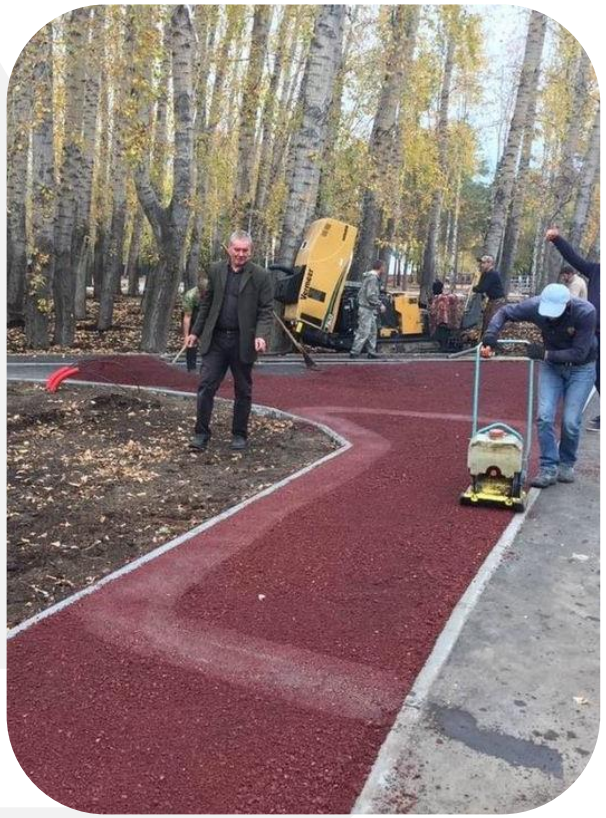
Tyumen

The plant LLC «Uralstroy»
Cooperation since 2018



Alexander Moiseenko Square
2018

Customers appreciate colored asphalt concrete

Be the first in your region!

EXPERT OPINIONS

NSP REALTY & DEVELOPMENT OF ST. PETERSNURG

Issue No. 19 dated 11/28/2022

Anton KIRAKOSYAN, *Founder and CEO of KAS-Dorstroy*

«We have been working with ABZ-1 colored asphalt for more than four years, however, so far we have only used two shades of red. One of the last objects is the Fermskoye Highway in Pushkin: the road is six meters wide and one kilometer long. But we mainly work with this material when creating bike paths in residential complexes. However, there are examples of the successful use of such material on overpasses, bridges, in squares, colored asphalt is laid, for example, at the Smolny Cathedral.

Despite our experience, each new application of colored asphalt is exciting. Its cost is much higher than the usual one, and installation requires special preparatory work. For example, it is necessary to carefully clean the equipment from the black bitumen with which it usually works. To prevent asphalt from sticking to the rollers, diesel fuel is used, but in the case of colored asphalt, only soapy solutions are allowed.»

Olga CHERDANTSEVA, *Head of the Competence Center for the Formation of a Comfortable Urban Environment of the Improvement Committee*

«Such material provides additional opportunities for architects and landscape designers. It will help create interesting and harmonious courtyard spaces. If the equipment on the site is made in blue, then the approach to it can also be done in this color. This will allow you to form a whole picture of the yard space, and not a set of disparate landscaping elements.

Colored asphalt can also be used to create pedestrian crossings. Yes, the costs in the moment will be higher, but they are offset by the durability of the material.»

Denis ZASEDATELEV, *General Director of Operational Business of Lenstroytrest Group of Companies*

Colored asphalt concrete is a fairly new material. For example, we are currently working with it on the new lines of our Okla and Yanila projects. It is mainly used in business-class residential complexes. Firstly, this is due to the price: such a road surface is more expensive than a standard one. Secondly, from the very beginning, you need to understand the semantic load and think over the use of the material at the design stage. Colored asphalt helps architects to realize an important task: to aesthetically and unobtrusively bring together the landscaping of the territory and the entire block.

Lyubov KOSTINA, *Executive Director of the O-KRUG architectural bureau*

We use colored asphalt mix for cycle paths, where color highlighting and surface uniformity are important. This coating is suitable not only for cycling, but also for rollerblading. Rubber pavements are sometimes used for bike paths, but asphalt concrete pavements are more wear-resistant. In addition, in most of the projects of residential complexes that our bureau is working on, yards without cars are designed. In this case, the bike path is included in the fire lane, so we also think about the service life of such a coating under traffic loads.

German MOYZHES, *Executive Director of the Let's Go Association*

Colored asphalt pavement improves the comfort and safety of cyclists, and with proper planning, improves the aesthetics of city streets, courtyards and squares. It does not wear out like paint, which means it is also an environmentally friendly solution. The Let's Go Association supports the use of such material in our region.

We believe that it is possible to color-code dedicated lanes for public transport, parking spaces for the disabled and other road sections that should be visually readable.

Given the preserved historical environment of our city, it is necessary, of course, to correctly enter colored areas and asphalt strips in the center.

Video of laying colored asphalt

Tap the screen to view

ABZ·1 GROUP

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