



BITUMEN BINDERS

polymer modified bitumens
for exceptional roads



Constant development

The world around us is developing rapidly, innovations and global tendencies are aiming at continuous improvement of road building industry. Pace, constant growth of freight transportation and traffic loads, adverse climatic conditions increase the requirements to pavements:

- **Ability to endure extreme loads:** annually increasing speeds, dense traffic streams, negative impact of axle loads
- **Increase of service life of roads** in 2,5–3 times with minimum expense on road usage and maintenance
- **Tolerance to negative environmental conditions:** extended range of operational temperatures, up to 80 zero crossings
- **Resistance to aggressive actions** of water, fuel, oil and deicing agents

Paving based on conventional bitumen binders doesn't cope with the mission area and come out of service a warranty period starts.

Modification with polymers improves strength and performance properties of standard bitumen binders. Road construction technologies using polymer modified bitumen (PMB) raise pavement durability, comfort and safety.



PMB BIOTUM®

Quality Standard

BIOTUM® Polymer modified bitumens are manufactured either in conformity with AASHTO, EN, GOST or according to the Customer’s Specification. We modify bitumen binders on modern equipment and machines using SBS polymers from the best suppliers. The quality of the end product is achieved and ensured by automatic monitoring of each stage of the production process

PRODUCT NAME	NORM
BIOTUM PMB	EN 14023
BIOTUM PGB	EN 12591
BIOTUM PG	AASHTO M 320

BIOTUM® polymer modified bitumens have the following specific advantages:

- **a wider plasticity range**
improves rheological properties of our modified bitumens
- **stability and homogeneity of structure**
preserver the properties of hot bitumen while long distance delivery
- **strength and elasticity**
in the specified temperature range prevent rutting in hot seasons and crack formation in cold seasons
- **comfortable paving**
due to reduction of tire wear by 13–18 % and noise by 6–8 decibels. Improved road safety due to better grip of wheel on the road.
- **resistance to hardening**
guarantees high fatigue resistance of pavement



Application

We produce BIOTUM® PMB considering and investing in resistance to permanent deformation and fatigue cracking. It enables to design and construct durable and long-wearing paving resistant to high loads and strong deformations

Busy roads, highways, bus lanes

imply intense track impact of heavy transport. Critical pressure in a pavement layer occurs at the temperature range from -10°C to 0°C (from 14°F to 32°F). Only during the winter period 2015/2016 in Moscow there were 82 zero crossings.

Modification with SBS-type polymers makes BIOTUM® bitumen binders resistant to deformations within the wide temperature range.

Bridges and engineering structures

besides being under traffic loads and enduring bridge deck vibrations, are subject to negative impact from moving and shifting in spans and superstructures. These peculiarities make pavement construction on a bridge span structure significantly different from the similar areas of highways.

Cross-linked polymers form a space network in BIOTUM® binders which provides effective stress relief in the top course.



Application

For pavements where fast accelerations and hard braking applied at high speed frequently occur, we create BIOTUM® PMB taking into consideration high transverse stress and radial loads

Airfields

undergo significant weight and dynamic loads under continuous service. Airfield pavement must be resistant to creep deformation influenced by basic loads. Application of PMB in airfield pavements worldwide is over 60 %.

BIOTUM® PMB is a great solution for permanently loaded pavements due to improved fatigue resistance which is on average 100 % higher than the same property of conventional bitumens.

Race tracks

are subject to loads related to fast acceleration of sport cars on straight areas and hard braking when entering the curve. As a result, we get high horizontal shear stresses. When licensing the race track FIA demands higher standards to such properties as penetration, softening point and elastic recovery.

BIOTUM® PMB with its improved properties of cohesion and elasticity is a high-end solution for highways.



Research and Development Center

We have a Research and Development Center (R&D Center) on site which houses a modernly equipped laboratory where physical and chemical properties of bitumen-based materials are studied

The specialists of the R&D Center apply best practices and skills on the high precision equipment. It enables to get accurate information about properties of bitumen binders when making tests according to Russian, European and North American norms and standards.

BIOTUM® PMB Custom order

Tasks of the R&D Center are not limited by developing products in conformity with standard specifications. Upon Customer's request we can develop a formulation for the product which will meet required properties.

Send your Custom order requests to sale@biotum.ru



Production capacity and storage

Production capacity of the BIOTUM plant complex is 200 000 tons of polymer modified bitumens per year. All production and logistics processes are connected with the integrated program software which controls the production cycle from raw material acceptance up to shipment of end products

Company assets:

- modern plant complex taking up a lot of 57 000 m² land
- production facilities with a total area of 7 500 m², equipped with machinery from such industrial leaders as MARINI, TEKFAIT, SUPRATON
- custom automated line for packing bitumen binders. Precise weight control when filling the product
- 1.5 km rail connection spurs
- storage facilities with a total area of 18 000 m²

For our Customers we offer:

- PMB and bitumen binders in drums ready to be shipped
- Prompt shipment of goods by trucks, sea containers and rail cars
- BIOTUM® DMS automated melting system for bitumen binders and PMB

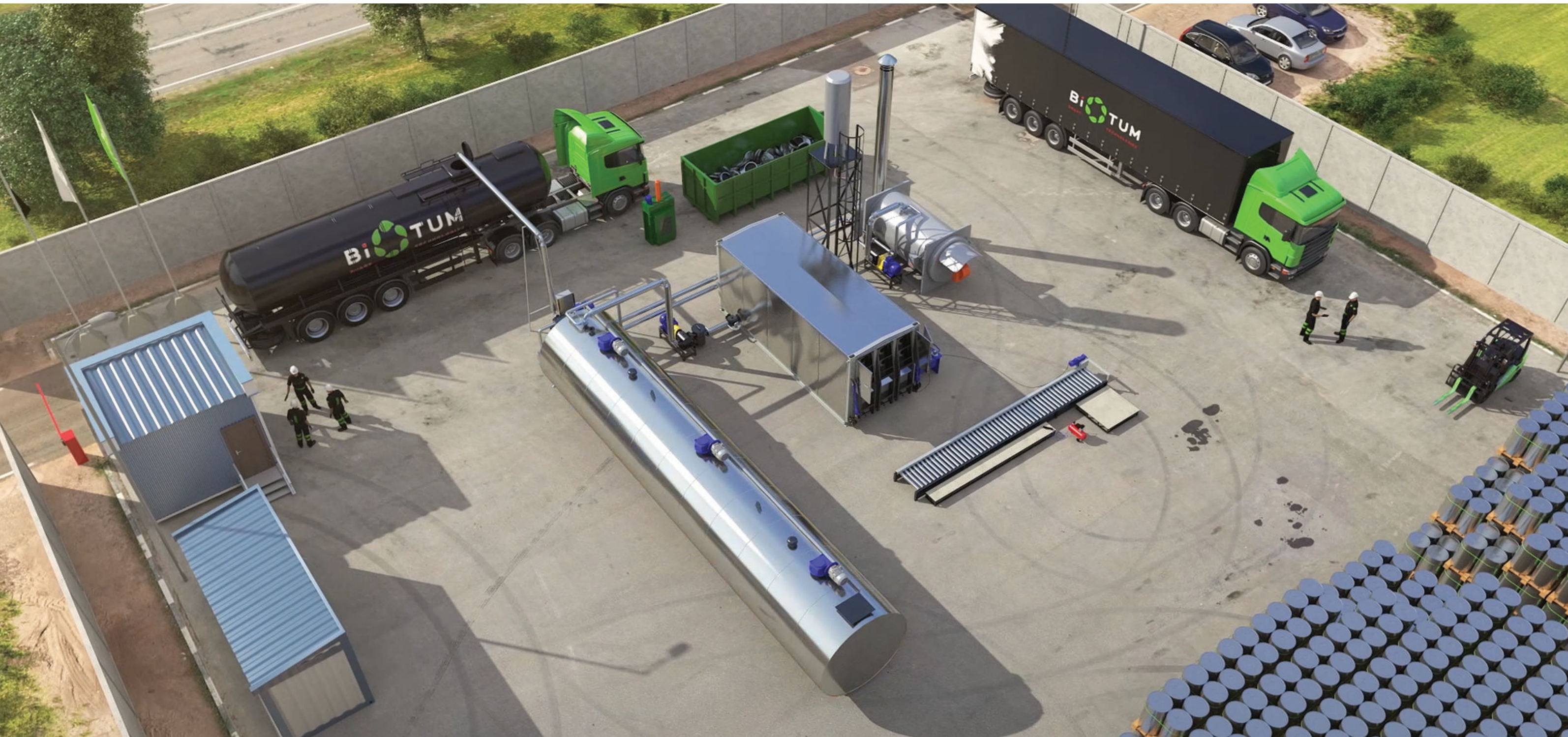


Packed PMB

End products are packed in one-time use metal drums of our own design and production. A pack consists of 4 drums on a pallet. Three different drum sizes enable to use space of a truck, a sea container and a rail car reasonably

This type of packing reduces shipment costs per 1 ton of the product up to 20% on average, and makes logistics solutions more effective than the existing ones on the market. We guarantee quality safety of the product. We recommend an automated complex BIOTUM® DMS for heating and melting drummed BIOTUM® bitumen binders.

By agreement with our Customers we can pack and ship bitumen binders in bituboxes, clovertainers (IBC) and big bags.



BIOTUM® DMS

Drum melting system

Based on the parameters of our pack we have designed and patented an automated drum melting system BIOTUM® DMS for bitumen binders and polymer modified bitumen

Advantages for our partners:



Capacity up to 200 tons per hour
BIOTUM® DMS systems can work flawlessly during 24 hours and produce from 10 up to 200 tons of PMB per hour.



Feasibility
Minimum work labor.
Reasonable energy efficiency.
Cost-efficient recycling of drums and pallets.



Small investments*
Area of a terminal — min 1000 m². There is no need in constructing expensive storage tanks and warehouses.



Full technical assistance
Our engineering team develops a project of BIOTUM® DMS according to a plot plan and technical requirements provided by the Customer.



Process automation
Patented automated supply unpacking, loading and unloading system for a BIOTUM pack.



Flexibility
To melt drummed bitumen binders in BIOTUM® DMS you can use natural gas, heavy fuel oil or diesel oil.

* We will calculate amount and time of return of investments regarding your BIOTUM® DMS project. Send your inquiries to: sale@biotum.ru

Recommended products

▼ FLEXIGUM® BR

2 component (bitumen-latex) spray-applied emulsion with improved heat resistance and adhesion. Seamless waterproofing material of high elasticity is used to waterproof superstructures of bridges with reinforced concrete deck.

Due to heat resistance of the material hot-mixed asphalt can be laid over membrane waterproofing.



▼ BIOTUM® Primers

We recommend polymer modified bituminous primers to provide firm bonding of sealants, emulsions and mastics with surface. BIOTUM® PRIMER gets inside material bonding dust and weakly fixed particles. Dries up quickly. Can be applied with brush, roller or spraying equipment.

BIOTUM® PRIMER BP/C

is used for concrete, brick and stone surfaces

BIOTUM® PRIMER BP/M

is used for metal surfaces



▲ BIOTUM® Joint sealants

Polymer modified, bituminous hot applied sealants should be heated in specific boiler-type melters.

BIOTUM® N1, N2, F1, F2, EN 14188

BIOTUM® TYPE I – TYPE III, ASTM D6690

Typical applications include sealing expansion and contraction joints in rigid pavements, concrete highways, airfields and engineering structures.

BIOTUM® RL80, RL90, RL100

This type of sealants is applied to make a thick and elastic filling block between a rail and adjoining pavement.



▲ BIOTUM® GEL BP

Single component cold applied liquid coating based on polymer modified bitumen. It is used for general waterproofing and sealing repairs.

Used for underground structures, also provides an effective seal between most roofing materials. Can be applied with brush or roller.

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