

PRODUCTS FOR ASPHALT PAVEMENTS

With more and more
recycled materials



**INNOVATIVE TECHNOLOGIES
FOR BIG JOBSITES AND TO INCREASE
THE SERVICE LIFE OF EVERY SINGLE STREET.**

PRODUCTS FOR ASPHALT PAVEMENTS

With more and more recycled materials

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■ Adhesion promoters

Amine-based: **Mapei Active DP03-N**

Phosphoric-based: **Mapei Active DP03-PA**

Vegetable-based: **Mapei Active DP03-V**

DESCRIPTION: synthetic-based liquid admixtures specially formulated to improve the chemical and physical compatibility between bitumen and aggregates; particularly recommended to use with acidic aggregates that have poor compatibility with bituminous binder. Using admixtures from the **Mapei Active** range extends the service life of asphalt pavements by reducing oxidation and leaching of the bitumen during adverse weather conditions.

AREA OF USE: all types of bituminous mixtures.

HOW TO USE: liquid admixtures from the **Mapei Active** range may be added during the production phase using special dosing units for liquid additives with “micro-dosage” devices. Alternatively, they may be added directly into tanks of bitumen if equipped with stirring system.

DOSAGE: the dosage rate depends on the nature of the aggregate, the quality of the binder and the performance properties required. The amount required varies from 0.05% to 0.4% by the weight of bitumen.

N.B. Dosage rates must always be verified for each specific case.



■ Regenerators for hot mixes

Mineral-based: **Mapei ACF-L2**

Vegetable-based: **Mapei ACF-R200, Mapei ACF-L3, Mapei ACF-L5**

DESCRIPTION: admixtures with the capacity to regenerate oxidised bitumen giving it back similar physical and mechanical characteristics of the original bitumen. Products classified as “**ACF**” (**functional chemical admixtures**) allow RAP (Reclaimed Asphalt Pavement) to be recycled without compromising the final performance properties of hot mix asphalt.

AREA OF USE: asphalt pavings containing RAP in their mix design.

HOW TO USE: products from the **Mapei ACF** range may be added directly during the production phase using special dosing units for liquid additives with “micro-dosing systems” load cells. Alternatively, they may be added directly into tanks of bitumen if equipped with stirring system.

DOSAGE: dosage rates depend on the level of oxidation of the bitumen in the RAP and the type of bituminous binder used in the production process. On average, the amount required varies from 0.05% to 0.3% by the weight of RAP.

N.B. Dosage rates must always be verified for each specific case.



Regenerators for warm mixes

Mineral-based: Mapei ACF-L1

DESCRIPTION: admixtures used in the production of **Warm-Mix Asphalt** made from special plasticizers with the capacity to change the physical and chemical characteristics of bitumen and lowering its viscosity. Adding **Mapei ACF-L1** guarantees that the conglomerate also has the same compaction rate at lower temperatures (of about 30°/50°C less) than those generally used for standard production process (+150°/+170°C).

In the case of hot mix asphalts, **Mapei ACF-L1** has also a regenerating effect on oxidised bitumen contained in the RAP.

By adding **Mapei ACF-L1** to the asphalt mix, it is possible to reduce the temperature of the production process, the level of atmospheric emissions and the final stiffness of the bituminous conglomerate.

AREA OF USE: production of warm-mix asphalt and asphalt conglomerates with a mix design containing fractions of reclaimed asphalt.

HOW TO USE: **Mapei ACF-L1** may be added directly during the production phase using special dosing units for liquid additives with “micro-dosing systems” load cells. Alternatively, they may be added directly into bitumen tanks if equipped with stirring systems.

DOSAGE: standard dosage rates are from 0.2% to 1.5% by the total weight of bitumen. If a regenerating effect is required, the amount added varies from 0.1% to 0.2% by the weight of RAP.

N.B. Dosage rates must always be verified for each specific case.



Plasticizers for warm mixes

Polymer-based: Mapei WR-S1 Plus

Polymer-based: Mapei WR-S2

DESCRIPTION: synthetic plasticizer-based products specifically formulated to make bituminous conglomerates that can be placed at low mixing temperatures (+110/+140°C). Adding these products allows RAP to be used in bituminous conglomerate. Thanks to their particular formulation, products from the **Mapei WR-S** range enable better compaction of the asphalt mixtures during the plastic phase which, once it has cooled down, will have better resistance to rutting. **Mapei ACF-L1** may be used in combination with **Mapei WR-S1 Plus** and **Mapei WR-S2**.

AREA OF USE: production of **Warm-Mix Asphalt** and asphalt conglomerates with a mix design containing fractions of reclaimed asphalt.

HOW TO USE: products from the **Mapei WR-S** range may be added directly during the production phase using special dosing units for solid granular additives. Alternatively, they may be added directly into bitumen tanks if equipped with stirring system.

DOSAGE: standard dosage rates vary from 0.5% to 3% by the total weight of bitumen.

N.B.: Dosage rates must always be verified for each specific case.



All for cationic bituminous emulsions

Rapid Setting Emulsifiers: **Mapei Emuls P**, **Mapei EM-L2**,
Mapei EM L10

Slow Setting Emulsifiers: **Mapei EM-Q4**

DESCRIPTION: selected mixtures of surfactants (mainly based on fatty amines and quaternary ammonium salts), properly designed to disperse bitumen into the aqueous phase, through a colloidal mill. Bituminous emulsions produced with these range of surfactants have the following advantages:

- fast dissolution of the emulsifier in the water phase during production;
- improved stability of the emulsion during storage and transport;
- more adhesion of bitumen to the substrates and to aggregates.

AREA OF USE: production of rapid, medium and slow setting bituminous emulsions, for tack coat, cold recycling, surface treatments like slurry seal, etc.

HOW TO USE: add the emulsifiers under stirring directly to the water phase, previously warmed and carried at an acid pH (around 2 pH).

DOSAGE: the amount of the emulsifiers required for the preparation of the bituminous emulsions is calculated as a percentage by weight of the total bituminous emulsion and according to the type of the emulsion produced. Generally, dosage rates vary from 0.2% to 0.5% for **Mapei Emuls P**, **Mapei EM-L2** and **Mapei EM L10**; and from 0.8% to 2% for **Mapei EM-Q4**.

N.B.: Dosage rates must always be verified for each specific case.



Latex to modify cationic bituminous emulsions: **Mapelatex CBR**

DESCRIPTION: synthetic SBR (styrene-butadiene-rubber) dispersed in water.

Bituminous emulsions produced with **Mapelatex CBR** have the following advantages:

- improved mechanical and physical properties of the bituminous film formed, like elasticity, durability and waterproofing ability;
- improved cohesion between layers;
- more adhesion to substrates and aggregates;
- increased bitumen softening point.

AREA OF USE: production of modified rapid, medium and slow setting bituminous emulsions, for tack coat, cold recycling, surface treatments like slurry seal, etc.

HOW TO USE: add **Mapelatex CBR** under stirring directly to the water phase, previously warmed and carried at an acid pH (around 2 pH), after the addition and dispersion of the emulsifier.

DOSAGE: the amount of the latex required for the preparation of the bituminous emulsions is calculated as a percentage by weight of the total bituminous emulsion and according to the type of the emulsion produced. Generally, dosage rates vary from 2% to 6%.

N.B.: Dosage rates must always be verified for each specific case.



Everything for anionic bituminous emulsions

Quick and medium-setting emulsifiers: **Mapei EM A1**

Acidifiers-compatibilisers for bitumen: **Mapei Pitch Stabilizer**

DESCRIPTION: selected mix of surfactants (mainly active principle anionic-based) specifically developed to promote bitumen dispersion in the watery phase using a colloid mill. Bituminous emulsions obtained with this range of surfactants have a number of advantages:

- quick dissolution of the emulsifier in the watery phase of the emulsion;
- better emulsion stability during transportation and storage;
- bitumen adheres more firmly to sublayers and aggregates.

AREAS OF USE: production of quick, medium and slow-setting bituminous emulsions, tack-coats, cold recycling, **Slurry Seal surface treatments, etc.**

HOW TO USE: while mixing, add the emulsifier to the bituminous emulsion water phase, previously pre-heated and basified (around pH=12).

DOSAGE: the amount required to prepare bituminous emulsion is a percentage of the total weight of the emulsion and according to the type of emulsion produced. Dosage rates for **Mapei EM A1** are generally 0.3% to 0.8% for tack coat-emulsion and 0.8% to 1.5% for medium and slow-setting emulsions.

Dosage rates for **Mapei Pitch Stabilizer** vary according to the quality of the bitumen used and are usually between 1% and 3% of the weight of the emulsion.

N.B.: dosage rates must always be verified for each specific area of use.



Fibres

Cellulose: **Mapefibre FPC** and **Mapefibre FPC Plus**

Cellulose-glass: **Mapefibre FPV**

DESCRIPTION: products with two functions: as a stabilising and thickening admixture for bitumen and to reduce backflow of the bituminous binder from the conglomerate. **Mapefibre FPC**, **Mapefibre FPC Plus** and **Mapefibre FPV** are used to improve the stability of all porous asphalt mixes and comply with the most widely adopted specifications.

AREA OF USE: production of porous asphalt and SMA (*Splittmastix Asphalt*).

HOW TO USE: **Mapefibre FPC**, **Mapefibre FPC Plus** and **Mapefibre FPV** may be added directly into mixing units of bituminous conglomerates before adding the bitumen. They are added through special dosing units for granular and/or fibre products.

DOSAGE: the amount of fibres required for bituminous mixes is calculated as a percentage by the weight of aggregates and according to the final performance properties required. Dosage rates vary from 0.1% to 0.6% by the weight of the asphalt conglomerate.

N.B.: Dosage rates must always be verified for each specific case.



■ Conglomerate modifying polymers

Low-melting: **Mapeplast Pavi 01**

High-melting: **Mapeplast Pavi 02**

DESCRIPTION: compound of selected polyolefin-based thermoplastic polymers in the form of granules coming from processing recycled plastic. Asphalt mixtures modified by adding these polymers have the following advantages:

- increase in mechanical properties and stiffness modulus;
- reduction in accumulated deformation due to repeated loads;
- improved fatigue resistance;
- reduction in permanent deformation due to static loads.

AREA OF USE: production of high-modulus asphalt mixtures and SMA (*Splittmastix Asphalt*).

HOW TO USE: products from the **Mapeplast Pavi** range may be added directly into mixing units for asphalt mixtures before adding the bitumen. They are added through special dosing units for granular and/or fibre products.

DOSAGE: the amount of polymers required for bituminous mixtures is calculated as a percentage by the weight of bitumen and according to the final performance properties required. Dosage rates vary from 3% to 10% by the weight of the bitumen.

N.B.: Dosage rates must always be verified for each specific case.



■ Polymer modified bitumen

PMB Soft & Medium: **Mapei e-SBC2**

PMB Medium & Hard: **Mapei e-SBC2 Plus**

DESCRIPTION: compound of selected elastomers (mainly based on Styrene-Butadiene-Styrene), in the form of granulated powders, combined with recycled rubbers and other specific raw materials. Asphalt mixtures modified by adding these polymers have the following advantages:

- increase in mechanical properties, elasticity and durability;
- reduction in accumulated deformation due to repeated loads;
- improved fatigue resistance;
- reduction in permanent deformation due to static loads.

AREA OF USE: production of porous asphalt mixtures, high-modulus asphalt mix and SMA (*Splittmastix Asphalt*).

HOW TO USE: products from the **Mapei e-SBC** range may be added directly into mixing units of polymer modified bitumen, even in the absence of a mill. They are added through special screw dosing units for powder and granular products.

DOSAGE: the amount of the polymers required for the modification of the bitumen is calculated as a percentage by the weight of bitumen itself and according to the final performance required. Dosage rates vary from 3% to 6% by the weight of bitumen.

N.B.: Dosage rates must always be verified for each specific case.



Fluxing oils

Mineral-based: **Mapei Flux 15**

Vegetable-based: **Mapei Flux Eco** and **Mapei Flux Eco LV**

DESCRIPTION: products made from a mixture of fluxing oils and additives that allow plastic asphalt mixtures to be produced and stored for long periods, also at low temperatures.

Products from the **Mapei Flux** range are particularly effective thanks to a physical action which reduces the viscosity of the binder, ensuring the coating of the aggregates and retaining the workability of the mix.

AREA OF USE: production of plastic asphalt mixtures.

HOW TO USE: products from the **Mapei Flux** range may be added directly into the mixing unit during the production phase after the bitumen has been added using special dosing units for liquid additives with "micro-dosing system".

DOSAGE: on average, the amount required varies from 10% to 30% by weight of bitumen.

N.B.: Dosage rates must always be verified for each specific case of use.



Cold mix asphalt

Hygro-hardening: **Mape-Asphalt Repair 0/8**

Plastic: **Mapei Asphalt Repair 2,0**

DESCRIPTION: ready-mixed products made from a mixture of additives, selected aggregates, bitumen and, where required, polymers. A **plastic asphalt** is specifically formulated so that it initially remains workable at room temperature. Once applied and compacted, the product loses its workability and acquires sufficient load-bearing properties and physical-mechanical characteristics to guarantee the durability of repair work over the years.

AREA OF USE: filling potholes in road surfaces and repairing pavements, communal areas in condos and small trenches for cable runs.

HOW TO USE: before applying the product, make sure the area to be repaired is clean and dry (if **Mape-Asphalt Repair 0/8** is used it is not necessary that the area to be repaired is dry). Pour the product on the area to be repaired and spread it out over the area. The material must then be compacted, preferably with a compactor-roller or a vibrating compactor plate.

DOSAGE: the consumption rate is around 23 kg/m² per cm of thickness.



■ Anti-kerosene two component systems for asphalt mix protection

DESCRIPTION: colored two component epoxy-acrylic resins treatment for the kerosene-resistant protection of bituminous conglomerate surfaces; certified in accordance to EN 13529 tests. Asphalt mixtures treated with **Mapei Epoxy Avio system** have the following advantages:

- protection against accidental contact with kerosene;
- protection against accidental contact with oils and other hydrocarbons products;
- improved resistance to atmospheric agents (like UV, rain, smog);
- consolidation of aged bituminous surfaces.

AREA OF USE: it can be applied on new or old bituminous conglomerate surfaces, not deteriorated and in the absence of contaminating materials that could limitate its correct adhesion to the substrate. Thanks to its good adhesion to the substrates, it can also be applied to pre-painted bituminous pavements.

HOW TO USE: **Mapei Epoxy Avio** can be applied with conventional roller techniques. For large surface areas, the product can be sprayed by using HVLP (High Volume Low Pressure) air system. The cycle generally involves the application of 1-2 layers of **Mapei Epoxy Avio** at a distance of about 2-4 hours in ordinary conditions of humidity and temperature.

DOSAGE: the consumption of **Mapei Epoxy Avio** is strongly influenced by the absorption and roughness of the substrate. In conditions of homogeneous support, the indicative consumption referred to a coat of product is about 1.4 kg/m² per mm of thickness of fresh product (corresponding to 0.6mm of hardened product), for a total of 2 coats.

N.B.: Dosage rates must always be verified for each specific case.



■ Anti-sticking products

Stripping oil: **Mapei Bit Remover 15** and **Mapei Bit Remover Eco Plus**

DESCRIPTION: products made from a mixture of oils, corrosion-inhibitors and additives that stop bitumen sticking to surfaces they come in contact with and guarantee long-term protection for mechanical components.

Products from the **Mapei Bit Remover** range are particularly effective thanks to a chemical-physical action that inhibits adhesion of bitumen and enable bituminous conglomerates to be detached from the surface of metal, without affecting the condition of the contact surface.

AREA OF USE: to clean metal components in production plants, loading buckets and paver units and to treat the surface of storage and waste bins.

HOW TO USE: spray on products from the **Mapei Bit Remover** range with a hose fitted with a spray head or apply the products with a rag dipped in the stripping solution. Apply the products evenly over the surface so that they form a fine insulating film.

Clean tools and equipment used to apply products from the **Mapei Bit Remover** range with solvent (ethanol, perchloroethylene, etc.).

DOSAGE: consumption varies from 20 g and 100 g per m².



Cold stabilisation and regeneration

Hydraulic Binders: **Mapei Coldpav 1**

Polymer Latex: **Mapei Coldpav 2**

DESCRIPTION: these products are a two-component systems:

Mapei Coldpav 1 mineral-based, non-cementitious hydraulic binder; **Mapei Coldpav 2:** acrylic resins with a regenerating effect.

Mapei Coldpav 1 binds mixes containing both natural aggregates and recycled material, such as **RAP**; **Mapei Coldpav 2**, on the other hand, gives to the bound layers more elasticity and improves the fatigue resistance of the materials.

A combination of **Mapei Coldpav 1** and **Mapei Coldpav 2** has also been successfully used to regenerate cold-recycled base course made from up to 100% of reclaimed asphalt.

AREA OF USE: cycle lanes, dirt roads, base courses and substrates for main and secondary roads.

HOW TO USE: **Mapei Coldpav System** technology may be used both in mixing plants and directly on site where it is required.

DOSAGE: from 3% to 7% for **Mapei Coldpav 1** and from 0.5% to 3% for **Mapei Coldpav 2** by the weight of the aggregates.

N.B.: Dosage rates must always be verified for each specific case.



Grouted Macadam

Pumpable Grout: **Mapegrout Drain Fill/Drain Fill NV**

DESCRIPTION: **Mapegrout Drain Fill/Drain Fill NV** is a cementitious mortar, used to create semiflexible floors with high mechanical properties. **Mapegrout Drain Fill/Drain Fill NV** has a super-plastic consistency and can fill bitumen conglomerate with 20-30% of voids, up to 6 cm of thickness. The use of **Mapegrout Drain Fill/Drain Fill NV** allows:

- high resistance to wear;
- reduction in permanent deformation due to static loads;
- no use of joints.

AREA OF USE: logistic areas in inter-ports, ports and airports. Areas for heavy-goods vehicles. Logistics centers. Car parks. Motorway toll areas.

HOW TO USE: mix with 20-25% of water, reaching a plasticity of around 20 seconds of Marsh cone.

DOSAGE: the amount of **Mapegrout Drain Fill/Drain Fill NV** varies from 5 kg to 8 kg per cm of thickness, per square meter, depending on the volume of the voids in the bituminous conglomerate.

N.B.: Dosage rates must always be verified for each specific case.



■ Anti-dust treatments

Vegetable-based: **Mapei Dust Zero**

Mineral-based: **Mapei Dust Zero Fix**

Acrylic-based: **Mapei Dust Zero Synth**

DESCRIPTION: these products are used to reduce the amount of loose dust given off from roads and areas that haven't been surfaced, such as dirt tracks and roads on building sites. Particularly recommended for use in airports, mines and sites where aggregates are stockpiled. Their effectiveness is given from their capacity to agglomerate fine particles into granules of a larger size.

AREA OF USE: cycle lanes, dirt roads, areas where loose material is stockpiled, access roads to mines and quarries.

HOW TO USE: **Mapei Dust Zero** technology may be used in both mixing plants and directly on site where it is required.

DOSAGE: between 3 and 5 litres per m² after diluting them with 5-30 parts of water.

N.B.: Dosage rates must always be verified for each specific case of use.



■ Everything for sealing

Hot-technology: **Polystrada Sealant**

Rapid two-component cold-technology:

Mapeflex Asphalt Crack Repair

DESCRIPTION: **Polystrada Sealant** is a special, hot-technology elastomeric sealant containing bitumen, elastomeric resins and solvents. **Mapeflex Asphalt Crack Repair** is a two-component, quick-setting polyurea sealant for repairing cracks in bituminous and other types of paving. Sealants from the Mapei line have a number of advantages: they block infiltrations of water into the layers of the road superstructure and are highly effective in reducing the onset and development of degradation in paving.

AREAS OF USE: sealing cracks in bituminous conglomerate and concrete paving, expansion joints in road decks and construction joints in concrete paving.

HOW TO USE: Prepare the surface to be treated, making sure the edges of joints are dry, clean and free of any dust and impurities. The use of compressed air is suggested for this operation.

DOSAGE: the amount required to seal a crack with a section of 1 cm² is around 0.1 kg of product per linear metre.



Prefabricated SAMI geocomposite membranes

Polystrada SA-V: with glass fleece reinforcement

Polystrada SA Plus: with glass fibre reinforcement

DESCRIPTION: prefabricated self-adhesive SAMI geocomposite waterproofing membranes made from highly polymer modified bitumen designed to act as a reinforcing, anti-pumping and anti-cracking interlayer.

AREAS OF USE: complies with EN 13249 (geotextiles for roads and railways), EN 14695 (bridges and viaducts) and EN 13707 (waterproofing membranes). Blocks the propagation of reflection cracks.

Waterproofs and prevents the passage of water into underlying layers, impeding pumping phenomenon and migration of fines.

Very low impact on the environment, cold-applied and compatible with all bituminous conglomerate mixes.

Eco-sustainable with a strengthening layer made from 100% recycled polyester.

Fully millable and recyclable without the need for special equipment.

When included as part of the calculation for a new paving package, using this membrane allows lower thicknesses of conglomerate to be applied.

Extends the service life of paving and drastically reduces the frequency of maintenance work compared with traditional membranes.

HOW TO USE: apply on clean, dry surfaces. After removing the protective film from the underside of the membrane it adheres to paving without having to apply bituminous emulsion beforehand.

SIZES AVAILABLE: the bituminous membrane is normally supplied in 15 metre x 1 metre rolls; other formats also available. It is recommended to overlap adjacent sheets of membrane by at least 10 cm.



Geogrids for strengthening roads

Polystrada Grid 50: glass fibre and polymer geogrid

Polystrada Grid 50 Plus: glass fibre and polymer geogrid with non-woven fabric backing

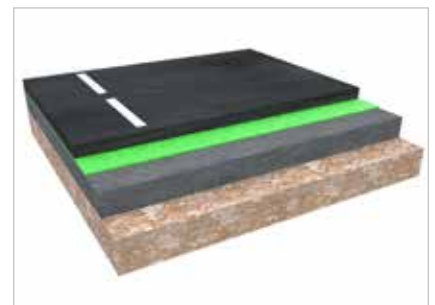
DESCRIPTION: Polystrada Grid are glass fibre geogrids in a regular mesh conformation with a protective polymer coating and sandwiched to non-woven fabric (Polystrada Grid 50 Plus). Every part of the geogrid is specially treated to prevent ageing from UV rays and rendered inert to withstand attack from chemical agents.

AREAS OF USE:

- Structural strengthening for highly trafficked road paving
- Structural strengthening for paving in airports
- Structural strengthening for industrial floors
- Structural strengthening for paving in carparks and lay-bys

HOW TO USE: The geogrids need to be fastened in place with nails or, in the case of bituminous conglomerate, by spray-applying a tack-coat of bituminous emulsion on the substrate to help them adhere.

The ideal position for the geogrids within the various layers of the superstructure is either at the intrados of the bitumen binder course or the extrados of the mixed unbound granular or mixed cement-bound base course.



EVERYTHING'S OK, WITH MAPEI

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