

Spray-Coat Permeable Running Track System

System & Installation Guide

System guidance for the spray-coat permeable running track system, including structure, installation conditions and construction steps.

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1. Overview

The Spray-Coat Permeable Running Track System features a porous, elastic base layer made of rubber granules bonded with a polyurethane binder. A wear-resistant, slip-resistant wearing course is spray-applied over the base layer. The system combines comfortable cushioning with effective drainage and is suitable for school playgrounds, public sports grounds, and everyday training facilities.

2. Key Features

Water Permeability and Drainage

The porous structure allows rainwater to drain quickly after rainfall, reducing the risk of trapped moisture and surface blistering.

Impact Attenuation

Provides comfortable cushioning underfoot and helps reduce impact during physical activity.

Slip and Wear Resistance

The uniformly textured surface provides consistent traction in both dry and wet conditions.

Weather Resistance

Good resistance to aging and ultraviolet (UV) exposure supports reliable outdoor performance.

Proven Installation Process

A well-established and consistent installation process offers good cost-effectiveness, with convenient routine maintenance and localized patching.

3. Typical System Structure

Subbase (Asphalt / Concrete)

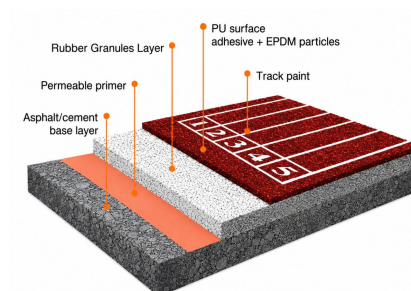
Primer / Sealer Coat

Porous Elastic Base Layer

(Rubber Granules + Polyurethane (PU) Binder)

Spray-Coated, Wear-Resistant and Slip-Resistant Wearing Course

Track Markings



4. Installation Guidelines

1. Installation Preparation

1.1 Subbase Conditions and Acceptance Requirements (Critical)

(1) Surface Flatness and Gradient

- Surface flatness: Check using a 3 m straightedge. The tolerance should comply with the project requirements; a commonly specified limit is ≤ 3 mm over 3 m.
- Gradient: The gradient must conform to the site drainage design. A typical range is 0.5%–0.8%, subject to the project drawings.

(2) Strength and Stability

- Asphalt subbase: The surface must be dense and free from oil contamination, loose material, significant rutting, and surface displacement.
- Concrete subbase: The concrete must achieve the specified design strength and be adequately cured. The surface must be free from dusting, hollow or debonded areas, and cracks. Any cracks must be properly repaired before installation.

(3) Moisture Content / Dryness

- The subbase must be dry and allowed to dry thoroughly after rainfall. For concrete subbases, moisture content testing or a plastic sheet test is recommended to reduce the risk of blistering or loss of adhesion caused by trapped moisture vapor.

(4) Surface Cleanliness

The subbase must be free from loose dust, dirt, sand, oil stains, release agents, and any other contaminants that could impair adhesion.

1.2 Main Materials

- Primer: Polyurethane (PU) primer
- Binder for the porous elastic base layer: One-component polyurethane (PU) binder
- Granules for the porous elastic base layer: EPDM granules (commonly 1–3 mm or 2–4 mm, depending on the system requirements)
- Spray coating material for the wearing course: Polyurethane surface mixed with fine granules or EPDM powder.
- Line-marking paint: Specialist polyurethane line-marking paint

1.3 Main Equipment

Grinding or shot-blasting equipment, commonly used for concrete subbases

Cleaning equipment, including industrial vacuum cleaners and air blowers

Forced-action mixer and electronic scale

Paving machine or manual paving tools, including screed rails, rakes, and rollers

Spraying equipment, including an air compressor, spray gun, or complete spraying unit

Setting-out and measuring instruments, including a total station, theodolite, steel measuring tape, and chalk line

Inspection tools, including a thickness gauge and temperature and humidity meter

2. Environmental Controls During Installation

- Ambient temperature: A range of 10 – 35 ° C is recommended, subject to the material manufacturer's instructions.
- Relative humidity: ≤85% is recommended. Condensation must be avoided.
- The subbase temperature must remain above the dew-point temperature to prevent condensation and moisture accumulation.
- Spray application must not be carried out during rain or when the subbase is damp, or under strong-wind and dusty conditions.
- After completing each installation stage, the surface should be protected from rainwater washout for the required period, based on the curing time of the materials used.

3. Standard Installation Process

Subbase Inspection and Preparation → Primer / Sealer Coat → Installation of the Porous Elastic Base Layer → Curing and Surface Finishing → Spray Application of the Wearing Course in Multiple Passes → Line Marking → Curing and Final Inspection

4. Detailed Installation Procedure

4.1 Subbase Preparation

- Thorough cleaning:

Remove all dirt, sand, loose dust, and oil contamination.

- Repair of surface defects:

Asphalt subbase: Mill out loose or unstable areas and replace them with suitable asphalt repair material. Level and compact depressions using asphalt patching material.

Concrete subbase: Saw-cut and open up cracks before filling or sealing them. Remove and repair hollow or debonded areas. Grind surface-dusting areas and level them with repair mortar.

- Grinding or shot blasting, where required:

Treat the surface according to the condition of the subbase to increase surface roughness and improve adhesion.

- Final cleaning and dust removal:

Vacuum the surface thoroughly to ensure it is completely free from loose dust.

4.2 Application of the Primer / Sealer Coat

Mix the primer thoroughly according to the specified mixing ratio. Apply it evenly by roller or squeegee.

Functions:

The primer seals the capillary pores in the subbase, improves adhesion, and reduces the risk of blistering.

The application rate must follow the requirements of the specific system. As a general principle, the coat must be thin and uniform, with no missed areas or material build-up.

Proceed to the next installation stage after the primer is touch-dry. The overcoating interval must comply with the product manufacturer's instructions.

4.3 Installation of the Porous Elastic Base Layer

- Material proportioning and mixing:

Mix the elastic rubber granules with the polyurethane (PU) binder at the specified ratio. A typical ratio is approximately 6:1 by weight, subject to the specific system requirements. Continue mixing until all granules are evenly coated with the binder.

- Paving and forming:

Spread the mixture using a paving machine or manual paving tools and control it to the specified design thickness, such as 8–10 mm. Pay particular attention to the compaction of edges and corners.

- Joint treatment:

During sectional installation, carefully control the timing of adjoining paving operations to ensure a strong bond between newly placed and previously placed material and to minimize visible cold joints.

- Curing:

Proceed to the next stage only after the porous elastic base layer has cured sufficiently to permit foot traffic or grinding. The required curing time will vary depending on the ambient temperature and relative humidity.

4.4 Surface Finishing and Levelling After Curing

Inspect the cured surface for localized high spots, holes, and joints. Grind and finish these areas as required.

Patch and level pinholes and depressions to provide a uniform surface and ensure a consistent appearance for the subsequent spray application of the wearing course.

4.5 Spray Application of the Wearing Course (Wear-Resistant and Slip-Resistant Layer)

- Material preparation:

Mix the materials according to the specified proportions for the wearing-course system, typically using a two-component spray coating material combined with fine granules or powder. Mix

thoroughly until uniform.

- Multiple cross-directional spray passes:

Apply at least two spray passes where recommended, using alternating cross-directions to ensure uniform coverage and a consistent surface texture.

- Key control points:

Prevent material build-up, sagging, uneven or mottled spray coverage, and excessive localized thickness that could cause surface tackiness or cracking.

Provide suitable wind protection in strong-wind conditions to prevent airborne sand, dust, and spray mist from contaminating the surface or surrounding areas.

- Color consistency:

Where possible, use materials from the same production batch and carry out the installation continuously within the same area to minimize color variation.

4.6 Setting Out and Line Marking

- Verify the control points and set out the track markings in accordance with the standard athletics-track drawings for a 400 m track or other specified track layout.
- Use masking tape or a line-marking machine to position the markings accurately. Apply the specialist polyurethane line-marking paint, normally in two coats.
- The line width, straightness, and curve radii must comply with the applicable specifications and project drawings.

4.7 Curing and Opening to Use

- Close off the completed area during the curing period.
- Light foot traffic and inspection:
 - Access must be controlled according to the touch-dry condition and curing progress of the materials.
- Opening for normal use:

The facility should be opened only after the entire system has fully cured. A typical curing period is 3–7 days, subject to the material manufacturer's instructions and actual site conditions.

5. Key Quality-Control and Acceptance Requirements

- Appearance:

The completed surface must be free from visible granule loss, blistering, cracking, sagging, and abnormal color variation.

- Surface flatness:

Carry out sampling inspections in accordance with the project requirements.

- Thickness:

Conduct thickness spot checks in different sections, including critical areas such as track edges, curves, and starting areas.

- Bond strength:

Where required by the client, conduct pull-off or peel testing to verify adequate adhesion.

- Slip resistance and drainage:

Observe surface drainage after rainfall and assess surface friction, or conduct the specified tests where required.

- Track markings:

The dimensions, line widths, positions, and permitted deviations must comply with the project drawings and applicable specifications.

6. Common Problems and Preventive Measures

- Blistering / Bulging

Cause: Excessive moisture in the subbase or inadequate sealing.

Prevention: Strictly control the subbase moisture content, ensure complete application of the Primer / Sealer Coat, and avoid installation during periods of high humidity or condensation.

- Granule Loss

Cause: Insufficient polyurethane (PU) binder, uneven mixing, or interference with the curing process.

Prevention: Accurately weigh and proportion the materials, control the mixing time, and close off the completed area during curing.

- Visible Joints

Cause: Excessive delay between adjoining paving operations or inadequate compaction.

Prevention: Plan the paving sequence carefully and pay particular attention to compaction and surface finishing at joints.

- Color Variation / Uneven Spray Application

Cause: Mixing materials from different production batches or inconsistent spray-application techniques.

Prevention: Use materials from the same production batch and install continuously within the same area. Apply the wearing course in multiple cross-directional spray passes using consistent spraying parameters.

7. Site Safety and Good Housekeeping

Store materials in a cool, well-ventilated area away from ignition sources. Smoking and open flames are prohibited within the installation area.

Operators must wear protective gloves, safety goggles, and suitable protective masks. Establish a clearly marked exclusion zone around the spraying area.

Collect and dispose of waste materials and packaging in accordance with applicable requirements. Prevent waste from entering or contaminating the drainage system.

