

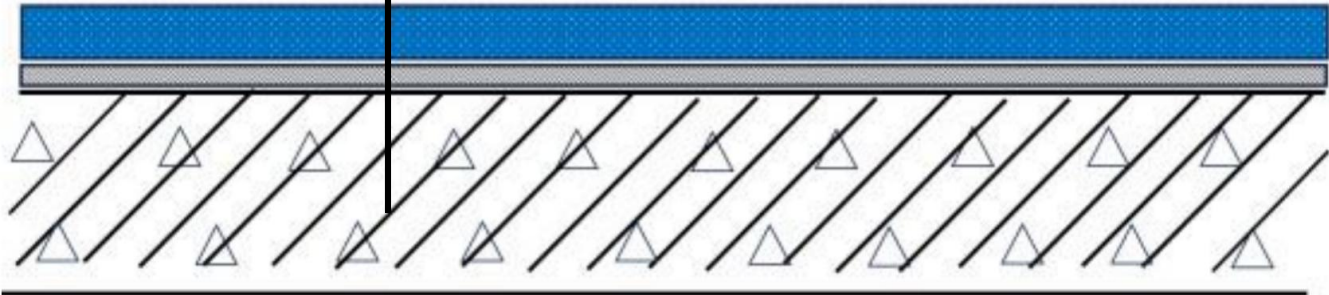


Keyue-WP100 High-Performance MMA Resin Waterproofing System

I. System Introduction

The Keyue-WP100 Methyl Methacrylate (MMA) Resin Waterproofing System is specially designed and developed by Guangdong Zhenghao Transportation Technology Co., Ltd. (Shenzhen Zhenghao Advanced Materials Technology Co., Ltd.) to provide high-quality, comprehensive, and long-lasting structural protection for important structures such as high-speed railway bridges, urban rail transit bridges, expressway bridges, cross-sea (river) bridges, hydraulic dams, and steel structure color steel roofs. This waterproofing system consists of a primer (cement-based surface — acrylic sealer; steel plate surface — acrylic anti-corrosion paint) and a methyl methacrylate resin waterproofing membrane. The specific structure and functions of each layer are illustrated in the following diagram and table.

| | |
|---------------------|--|
| Waterproof Membrane | Methyl Methacrylate (MMA) Resin Waterproof Coating, 1.5-3.5 kg/m ² |
| Primer | Acrylic Sealing Paint / Acrylic Anticorrosion Paint, 0.2-0.3 kg/m ² |
| Substrate | Cement Concrete / Steel Plate (Sandblasted) |



| Component | Product Name | Coating Thickness | Primary Function |
|--------------------|---|-------------------|---|
| Primer | Acrylic Sealer (Cement Concrete Base) | 20–40 μ m | Seals concrete surface pores, enhances adhesion of the waterproof membrane to the base surface. |
| Intermediate Layer | Acrylic Anti-Corrosion Paint (Steel Plate Base) | 30–50 μ m | Anti-corrosion and anti-rust for steel surfaces, enhances adhesion of the waterproof membrane to the base surface. |
| Top Coat | Methyl Methacrylate Resin Waterproof Coating (Membrane) | 1.0–2.5 μ m | Main waterproof membrane providing the most effective waterproof and anti-corrosion protection to the base surface. |

.....

II. Application

- Waterproofing and anti-corrosion for steel and concrete surfaces of expressway bridges.
- Waterproofing and anti-corrosion for steel and concrete surfaces of urban interchange bridges.
- Waterproofing and anti-corrosion for steel and concrete surfaces of high-speed railway, intercity railway, and urban rail transit bridges.
- Waterproofing and anti-corrosion for bridge surfaces such as anchorages, maintenance roads, cable-stayed zones, and non-motorized lanes.
- Waterproofing and anti-corrosion for hydraulic dams.
- Waterproofing and leak-proofing for building roofs, balconies, and terraces.
- Repair and renovation of damaged waterproof layers such as polyurea, polyurethane, and asphalt membranes.

.....

III. Characteristics

- The system design is reasonable, with good adhesion between layers and long-lasting waterproof durability.
- High tensile strength, tear strength, and compressive strength to withstand various vehicle impacts and vibrations on the surface.
- Good flexibility and elasticity to accommodate deformations and vibrations on the bridge surface without cracking.
- Dense coating with strong adhesion to the base surface, effectively isolating water, chloride ions, acids, alkalis, and oils from penetrating and corroding the base surface.

III. Characteristics

- Excellent high-temperature resistance, preventing delamination and cracking under vehicular pressure in hot summer conditions.
 - Excellent weather resistance, allowing long-term exposure to air without requiring any protective layers, with no surface cracking, blistering, or peeling.
 - Can be directly applied under railway ballast as a waterproof layer, eliminating the need for a concrete protective layer.
 - Can be submerged in (salt) water for extended periods to protect underwater concrete structures and prevent ice impact damage to water structures.
 - Fast curing with a short curing time, allowing for low-temperature application and wide construction adaptability
-

IV. Reasons for Selection

- Compared to existing waterproof coatings like polyurethane, acrylic emulsion, polymer cement, and modified asphalt, MMA resin waterproofing layers offer superior tensile strength, tear strength, flexibility, water resistance, aging resistance, corrosion resistance, and adhesion to the base surface.
 - Suitable for various base surfaces including cement concrete, steel, color steel roofs, and old asphalt membranes.
 - Cures and dries within 60 minutes at normal and low temperatures, with a short curing time, minimizing traffic disruption.
 - Can be applied during night or early morning hours, with minimal impact from temperature and humidity, ensuring dense coatings suitable for high-speed or intercity railway bridge waterproofing repairs during short maintenance windows.
 - Large areas can be sprayed using high-pressure airless (or automatic) spraying equipment, ensuring coating thickness and uniformity with high construction efficiency. For small areas or local repairs, scraping can be used, providing flexibility and convenience.
 - Suitable for both cold northern and humid southern regions.
 - MMA resin coatings are widely chosen for waterproofing bridge surfaces on large cross-sea, cross-river, and cross-gorge bridges in China, with excellent results.
-

V. Technical Properties

• Acrylic Sealer

| Properties | Value | Test Method |
|---|------------------------------------|-------------------|
| Appearance | Uniform consistency | Visual Inspection |
| Non-volatile content (%) | ≥ 40 | GB/T 1725 |
| Surface Dry Time (h, 23 ± 2 °C) | ≤ 1 | GB/T 1728 |
| Hard Dry Time (h, 23 ± 2 °C) | ≤ 24 | GB/T 1728 |
| Bond Strength to Sandblasted Steel Surface (MPa) | ≥ 2.5 or base surface failure | GB/T 5210 |
| Heat resistance (80°C, 2h) | No flow, blistering, or sliding | GB/T 1735 |
| Alkali resistance (saturated calcium hydroxide solution 168h) | No cracking, no peeling | GB/T 9274 |

• Acrylic Anti-Corrosion Paint

| Properties | Value | Test Method |
|--|---------------------------------|-------------------|
| Appearance | Uniform consistency | Visual Inspection |
| Non-volatile content (%) | ≥ 30 | GB/T 1725 |
| Surface Dry Time (h, 23 ± 2 °C) | ≤ 1 | GB/T 1728 |
| Hard Dry Time (h, 23 ± 2 °C) | ≤ 2 | GB/T 1728 |
| Bond Strength to Sandblasted Steel Surface (MPa) | ≥ 5 | GB/T 5210 |
| Heat resistance (80°C, 2h) | No flow, blistering, or sliding | GB/T 1735 |

- MMA Resin
Waterproof Membrane
(Coating)

| Properties | | Technical | Test Method | |
|--|-----------------------------------|---------------------------------|-------------------|-----------|
| Appearance | | Uniform consistency | Visual Inspection | |
| Solid content (%) | | ≥ 30 | | |
| Surface Dry Time (h, 23 ± 2 °C) | | ≤ 1 | | |
| Hard Dry Time (h, 23 ± 2 °C) | | ≤ 2 | | |
| Full drying time (min, 0 ± 2 °C) | | ≥ 5 | | |
| Tensile strength (MPa) | | ≥ 12.0 | | |
| Elongation at break (%) | | ≥ 150 | | |
| Impermeability (0.6MPa, 24h) | | Impermeable | | |
| Heat resistance (200°C, 2h) | | No flow, blistering, or sliding | | |
| Low-temperature bending property (-20 °C, Φ 20, 180 °) | | No cracks | | |
| Heating shrinkage rate (%) | | ≥ -4.0, ≤ 1.0 | | |
| Tensile strength retention rate after aging (%) | Heat treatment (80 ± 2 °C, 1000h) | ≥ 90 | GB/T 16777 | |
| | UV treatment (1000h) | | | |
| | Acid treatment (168h) | | | |
| | Alkali treatment (168h) | | | |
| Elongation at break after aging (%) | Heat treatment (80 ± 2 °C, 1000h) | ≥ 135 | | |
| | UV treatment (1000h) | | | |
| | Acid treatment (168h) | | | |
| | Alkali treatment (168h) | | | |
| Shore hardness (D) | | ≥ 50 | | GB/T 2411 |
| Right-angle tear strength (N/mm) | | ≥ 50 | | GB/T 529 |
| Impact resistance (1kg, 100cm) | | No cracks | GB/T 1732 | |
| Bond strength with steel surface (MPa) | | ≥ 5.0 | GB/T 5210 | |
| Bond strength with concrete surface (MPa) | | ≥ 2.5 | GB/T 16777 | |
| Alkali resistance (saturated calcium hydroxide solution, 500h) | | No cracking, no peeling | GB/T 9265 | |
| Acid resistance (5% H2SO4, 240h) | | No cracking, no peeling | GB/T 9274 | |
| Salt resistance (saturated sodium chloride solution, 240h) | | No cracking, no peeling | GB/T 9274 | |

VI. Theoretical Consumption

- Acrylic Sealing Paint: 0.3~0.4 kg/m² (Dry film thickness approx. 40~80 μm)
- Acrylic Anticorrosion Paint: 0.2~0.3 kg/m² (Dry film thickness approx. 40~50 μm)
- Methyl Methacrylate (MMA) Resin Waterproof Coating (Gray or White): 1.2~3.5 kg/m² (Dry film thickness approx. 1.02.5 mm), with a minimum single film thickness not less than 1 mm. The specific amount depends on the designed thickness and the texture and roughness of the substrate.

VII. Construction Points

- Construction Methods

| Product Name | Coating Thickness |
|--------------------------------|---|
| Acrylic Anti-Corrosion Paint | Roll coating, brushing, spraying |
| MMA Resin (Waterproof Coating) | High-pressure airless spraying, troweling |
| Acrylic Resin Adhesive | Roll coating, brushing |

- Substrate Treatment

Newly constructed concrete surfaces should be cured for at least 7 days. The substrate must be clean, dry, and solid, free of slurry, oil, or other surface contaminants (sandblasting or grinding is recommended). Concrete defects should be repaired with polymer mortar. Steel substrates need to be treated to remove surface rust, oil stains, and other loose attachments, sandblasted to Sa2.5 grade.



- Primer Application

Open the package of Acrylic Sealing Paint / Acrylic Anticorrosion Paint, stir evenly, and directly roll or spray onto the sandblasted concrete or steel substrate. The coating should be applied evenly until the designed thickness is reached. The actual application rate should be determined based on the substrate's roughness and texture.



- Topcoat Application

Mixing: Open the package of Methyl Methacrylate Resin Waterproof Coating component A and B (gray or white). Stir each component evenly with a mixer, then measure out the special curing agent BPO powder (as per the package instructions) and add it to component B. Stir for 5 minutes until fully dissolved.

Spraying: After the primer is cured, the waterproof coating can be sprayed. The waterproof coating should be sprayed using high-pressure airless spraying equipment. The prepared AB components are fed into the mixing chamber via separate feed pumps, mixed, and atomized. The thickness is measured with a wet film gauge, ensuring even spraying.

Scraping: After the primer is cured, the waterproof coating can be applied by scraping. Mix the AB components evenly, pour them onto the substrate, and spread them evenly using a toothed scraper, achieving the designed thickness. The mixed AB components should be used quickly to avoid gelation and failure.





- Cleaning

All tools and equipment should be cleaned with solvents such as acetate, xylene, or thinner.

- Precautions

- Smoking and open flames are strictly prohibited on the construction site, which must be kept clean.
- Work is prohibited during rain, snow, hail, fog, and wind speeds above level four.
- Construction personnel must be trained before work and wear protective gear such as masks, gloves, and foot covers.
- Areas not to be coated should be protected in advance.
- The substrate temperature should not exceed 45°C, and the surface must be dry, clean, and solid.
- Do not add the special curing agent BPO powder to component A, and do not mix the stirrers used for different components. The mixed component B with BPO powder must be used quickly to avoid gelation and failure.
- After the work is completed, finished product protection should be ensured to prevent damage and contamination.

.....

VIII. Packaging and Storage

- Packaging Specifications

| Product Name | Packaging Specifications |
|---|---|
| Acrylic Sealing Paint / Acrylic Anticorrosion Paint | 20 kg/barrel, iron bucket |
| MMA Resin Waterproof Coating Component A | 60 kg/barrel and 200 kg/barrel, iron bucket |
| MMA Resin Waterproof Coating Component B | 58.5 kg/barrel and 195 kg/barrel, iron bucket |
| Special Curing Agent for Waterproof Coating BPO Powder | 25 kg/box, cardboard box |

- **Storage Requirements**

All components must be stored in a cool, dry, ventilated place with protection from direct sunlight, away from open flames and food storage. The storage temperature should not exceed 40°C. Under normal storage conditions, the shelf life of unopened products is one year.

.....

IX. Safety and Health

Before construction, materials and safety manuals must be available on-site. Construction personnel must read and understand them.

.....

X. Project Cases



Waterproof layer on the bridge deck of the Shanghai-Nanjing Intercity High-Speed Railway



Waterproof layer on the bridge deck of the Guangzhou-Zhuhai Intercity Railway Dongsheng Bridge



Waterproof layer on the bridge deck of Foshan West Station, Gui-Guang-Nan-Guang Railway



Waterproof layer on the overpass bridge of Foshan West Station, Gui-Guang-Nan-Guang Railway



Waterproof and anti-corrosion layer on the bridge deck of the Rongjiang Bridge, Xiamen-Shenzhen High-Speed Railway



Waterproof layer on the overpass bridge of the Shekou Port Passage, Guangzhou-Shenzhen Coastal Expressway



Waterproof protection layer on the main cable anchor of the Humen Bridge



Waterproof layer on the roof of Beijing R&F Residential Area



Waterproof bonding layer on the bridge deck of the Xiamen-Zhangzhou Sea-Crossing Bridge



Waterproof layer on the inspection path of the Xiamen-Zhangzhou Sea-Crossing Bridge



Waterproof bonding layer on the bridge deck
of the Ma'anshan Yangtze River Bridge



Waterproof bonding layer on the bridge deck
of the Tongling Yangtze River Second Bridge
(Hefei-Fuzhou High-Speed Railway)



Waterproof bonding layer on the bridge deck
of the Chongqing Egongyan Yangtze River
Bridge



Waterproof bonding layer on the bridge deck
of the Tengchong Longjiang Bridge, Yunnan
Province

The technical data and operating procedures provided in this document are based on our current professional knowledge and practical experience and are for reference only. For specific project applications, please consult our sales or technical personnel for comprehensive technical guidance and services.

Shenzhen Zhenghao High-Tech Materials Technology Co., Ltd.

Contact Address: Room 504, Building C, 6th Floor, Liuwei Business Center,
Longjing Community, Bantian Street, Longgang District, Shenzhen

Phone Numbers: 0755-86670839, 0755-23012001

Fax Number: 0755-86670836

Website: www.zohow.cn

Email: szzhcp@szzhcp.com

Guangdong Zhenghao Traffic Technology Co., Ltd.

Contact Address: Industrial Avenue, Dawan Industrial Transfer Park, Dawan Town,
Yunan County, Yunfu City, Guangdong Province

Phone Number: 0766-849993

