

COMPANY	PRODUCT CODE (SKU)	REVISION DATE
NANVERA Advanced Materials	BR-029 — NAN-VE B-MASTER	May 2026 / Rev. 02

1. Product Description

UNSPSC Code: 31211900 (Paving Materials). CSI MasterFormat Classification: 32 01 13 (Asphalt Paving Surface Treatment).

Technical Description: NAN-VE B-MASTER (BR-029) is a Smart Composite Material and ultra-high-performance bitumen concentrate that functions as a "Pre-Engineered Binder." Rather than relying solely on the "modification" of properties as traditional polymers do, it establishes a "structural foundation" that transforms liquid bitumen from a simple adhesive substance into a reinforced nano-matrix, combining the load-bearing capacity of concrete with the superior elasticity of rubber.

2. Engineering Mechanism of Action

The system operates through three advanced engineering mechanisms:

(1) Molecular Structuring and Absolute Integration — the material does not remain as "dispersed" particles inside the bitumen; it chemically bonds with it to form a single chemical identity, completely preventing "phase separation" during storage or operation.

(2) Structural Cross-Linking and Elastic Memory — once fused (at 148°C), it spreads to form a continuous "nano-chemical fabric." This fabric prevents bitumen molecules from sliding under truck loading pressure and gives the asphalt a "sustained elastic memory" that guarantees recovery exceeding 75% once the load is removed.

(3) Smart Nano-Blockade — the nano-network acts as a protective shield that traps light oils (maltenes) inside the matrix, preventing their evaporation and protecting the bitumen from premature oxidation, thermal degradation and brittleness, giving the road "chemical immunity" and preserving its youth for double the service life.

4. Application Instructions

Dosage (Central Mixing Plants): Proportion: 5% of the bitumen weight in the mix. Temperature: 140°C or above. Mechanism: direct mixing at the plant to ensure homogeneity of the active component before adding the aggregate.

Dosage (Mobile Asphalt Mixers): Proportion: 10% of the bitumen weight in the mix. Temperature: 140°C or above. Mechanism: thorough, continuous mixing for no less than 30 minutes during transport, prior to laying and compaction.

Required PPE: The material is applied and mixed hot (+140°C); protective clothing, heat-resistant gloves and a face shield are required.

5. Laboratory Testing Codes and Accreditation

National Accredited Laboratories: Egyptian Petroleum Research Institute (EPRI) – Asphalt and Polymers Services Center.

International Accredited Laboratories: Swiss Federal Laboratories (Empa) and (IMP), accredited by

(Innosuisse).

Penetration and Softening Codes: Passed and exceeded (ASTM D5) for penetration and (AASHTO T53) for softening.

Thermal Aging Code: Passed the (ASTM D2872) standard for aging and brittleness testing. Advanced

Rheological Codes: Dynamic Mechanical Analysis (DMA) and the (MSCR – EN 16659) test for rutting resistance.

Rubber-Bitumen Specifications: Compliant with, and exceeds, (ASTM D6114) standards for rubber-modified bitumen.

Technical and Operational Compliance

Activation of the "continuous nano-network" is strictly dependent on adherence to the 140°C application temperature and the 30-minute mixing time specified for mobile mixers.