RARX® TECHNICAL DATA SHEET

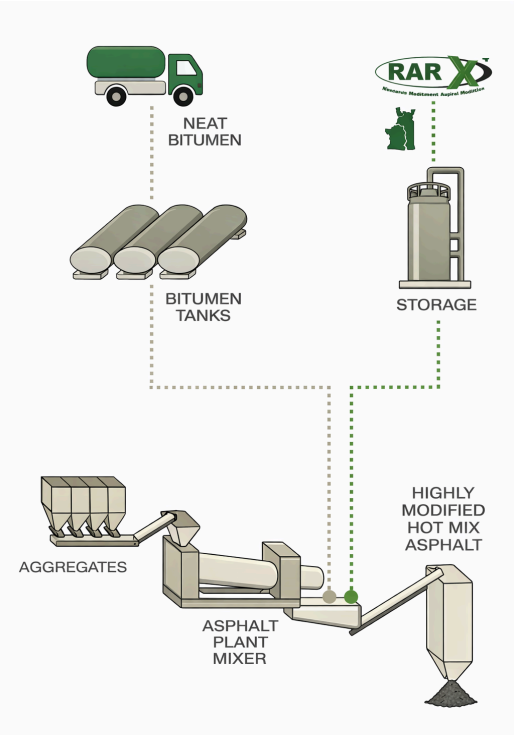
July 2025

Product Brochure

Product Overview

RUBBER ADDITIVE FROM END-OF-LIFE TYRES (ELT)

RARX® is an environmentally friendly elastomeric additive composed of recycled rubber derived from end-of-life tyres, which is processed and treated using patented technology, producing a dry-digested rubber that allows the direct achievement of the performance of a modified asphalt mixture.



Its behaviour, once incorporated into the bituminous mixture, can be interpreted as an elastomeric additive of the asphalt mixture, modifying and increasing its resistance to fatigue, increasing its lifespan and its resistance to cracking, generating asphalt mixtures with performance similar to those produced with bitumen modified with synthetic polymers.

RARX® can be added to any type of hot mix. During the production of mixtures, RARX® is added directly into the mixer or the drying drum of the plant together with the aggregates and before adding the bitumen, using the existing mineral filler silos or additive dosing systems in the plant.

RARX® is a technical additive with CE marking, which guarantees its quality.

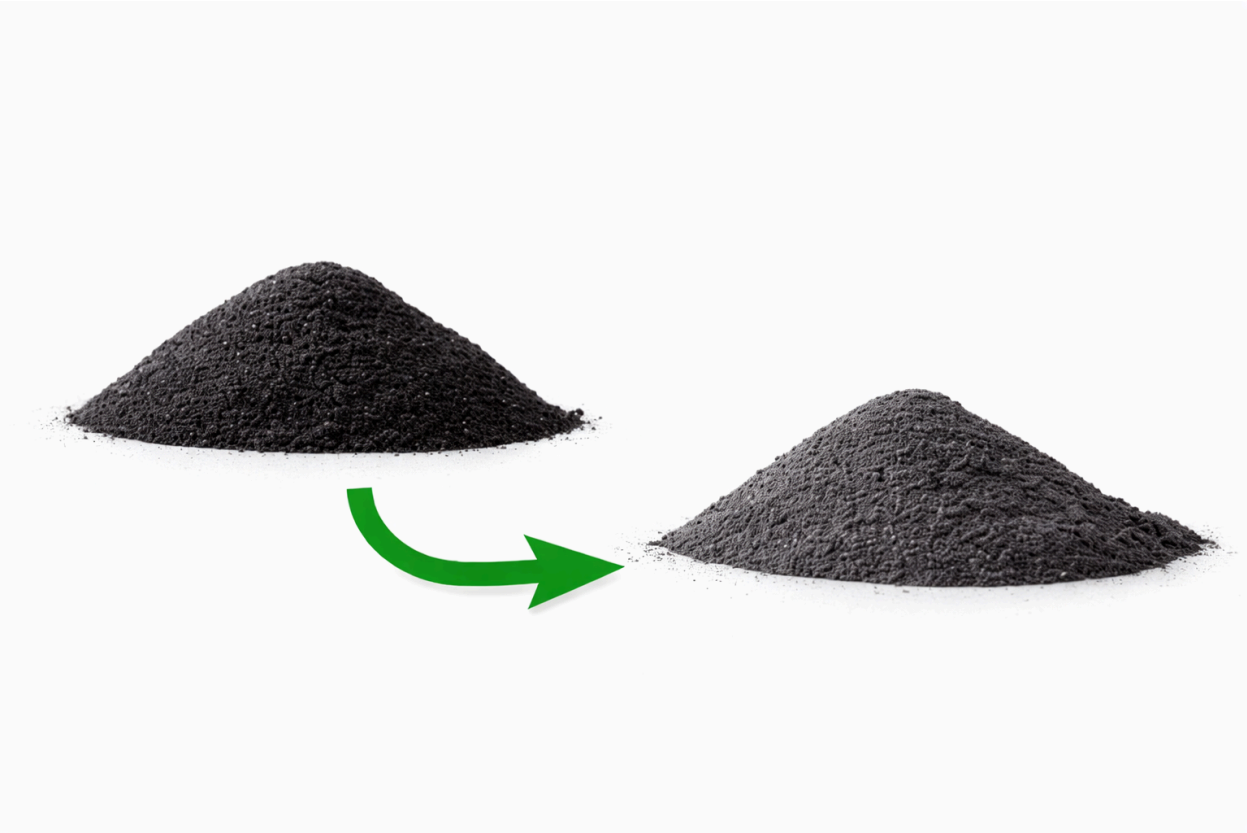
PRODUCT AND COMPANY IDENTIFICATION

Product Identification:

- Product Name: RARX®
- Material Use: Elastomeric rubber additive from ELT

- Company Identification: RARX UK

GENERAL DESCRIPTION



RARX® is composed of recycled rubber powder from end-of-life tyres (ELT), bitumen, and mineral products and other additives.

- Physical state: Solid, dark grey powder
- Odour and appearance: Fine grain, greyish granules
- Moisture: <0.03%
- Bulk density: 0.6 [±0.03] g/cm³
- Specific gravity: 1.031 g/cm³ [±0.03]
- Flash point [°C]: >300°C
- Solubility: Insoluble in water

- Chemical stability: Incompatible with strong oxidising agents

Typical granulometries of RARX® fall within the range shown above.

PRODUCT COMPOSITION

Composition to be considered in the mix design:

- ELT rubber powder content: 60%
- Bitumen content: 16% (±3%)
- Limestone filler $Ca(OH)_2$ and additives: 24% (±3%)

SUPPLY

RARX® is supplied in 0.55-tonne big bags or in bulk in tankers with solid conveying systems for storage and operation from the plant's filler silo.

STORAGE

In case of big bag supply, keep the big bags dated and stored in ventilated warehouses.

Direct sunlight must be avoided and the material must be kept dry to prevent degradation of the packaging.

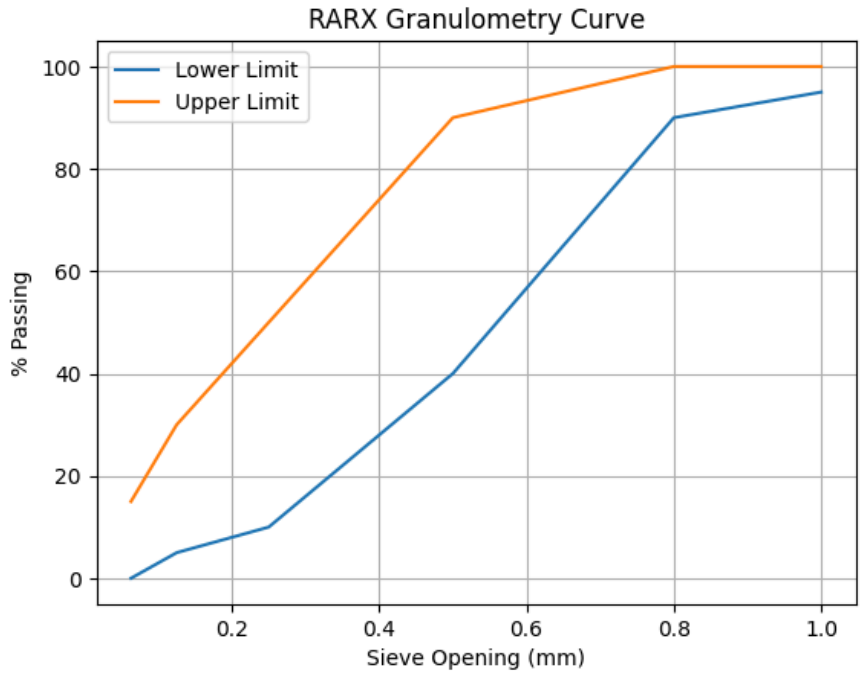
SHELF LIFE

The product does not degrade; however, its use is recommended within one year from the production date.

If this period is exceeded, it is recommended to sieve the product using a vibrating screen to break any agglomerations that may occur due to prolonged storage.

SIEVE (MM) – LIMITS

Sieve (mm)	Lower Limit (% passing)	Upper Limit (% passing)
1.000	95	100
0.800	90	100
0.500	40	90
0.250	10	50
0.125	5	30
0.063	0	15



TRANSPORT

No special transport is required (not an ATEX product).

HANDLING IN ASPHALT PLANTS

For handling RARX®, always follow the recommendations in the product Safety Data Sheet (SDS).

In any case:

Handling RARX® in big bags

RARX® will be dosed into the plant in different ways depending on available equipment:

- Batch plant without solid dosing system:
  Big bags are discharged directly into the plant's filler silo, allowing automatic dosing. RARX® enables the use of conventional filler dosing systems.
- Batch plant with solid addition hopper:
  The product density must be considered when calculating dosing. For high-content applications, pressurised hopper systems are recommended.
- Continuous plants:
  Direct feeding into the mixer via a hopper with a screw conveyor and adjustable flow rate is recommended.

Handling RARX® supplied in bulk

When supplied in bulk from tanker trucks, handling is identical to standard filler handling and does not require additional plant equipment.

RECOMMENDATIONS FOR ASPHALT MIX PRODUCTION

RARX® must be added at a percentage previously defined by the mix design, ranging between 0.5% and 4.5% of the total weight of the bituminous mixture, depending on the type of mix used.

RARX® can be applied in various types of bituminous mixtures: rough, open, dense, thin layers, conventional, SMA, etc.

The exact amount of RARX®, mixing temperature, and minimum mixing time must be determined through a formulation study carried out by an independent laboratory experienced in this type of mix design.

The RARX® content must be determined either based on the desired ELT rubber content in the mix or based on the final performance required.

Once the exact percentage is defined, it must not vary by more than ±0.5%.

In the production of bituminous mixtures with RARX®, a conventional asphalt plant (continuous or batch) will be used.

To ensure homogeneity, RARX® is added to the mixer with the aggregates before adding the bitumen. It must be mixed for the necessary time to ensure uniform distribution (maximum 5 seconds, depending on the plant) before adding bitumen.

RARX® significantly increases the final viscosity of the asphalt. Therefore, working temperatures similar to those used with modified bitumen are recommended, typically 10–15°C higher than conventional mixes.

Recommended production temperature: 175°C to 180°C

This temperature may be reduced when using warm or semi-warm mix additives.

Mixing sequence:

1. Add aggregates
2. Add RARX®
3. Dry mixing (max 5 seconds)
4. Add bitumen
5. Wet mixing (max 20 seconds)

Note 1

RARX® already provides high-quality filler; therefore, filler content should be reduced accordingly, and conventional filler/bitumen ratios may not apply.

Note 2

The ELT rubber reduces bitumen penetration significantly.

Therefore, regardless of climate, higher penetration base bitumen is recommended (minimum B 50/70).

LAYING AND COMPACTION RECOMMENDATIONS

Mixtures with high RARX® content exhibit behaviour similar to high-viscosity modified asphalt.

Initial compaction temperature should be above **165°C** (can be lower with warm mix additives).

High compaction must be transmitted to the mixture at the front of the screed, ensuring that the mix is already highly pre-compacted before final levelling.

For high-content mixes (BBTM, SMA, GAP):

- Start with steel rollers
- Use water with approx. 2% hydrated lime

For thin layers:

- Adjust vibration and screed tamping
- Prevent bouncing over coarse aggregates

Compaction must be applied early, ensuring high pre-compaction before final levelling.

Rollers must be positioned within **15 metres** of the paver.

REGULATORY COMPLIANCE

RARX®:

- Complies with road regulations across multiple countries
- Meets NT 02-2020 requirements as a substitute for rubber bitumen
- Classified as an elastomeric additive under PG3 (Article 543.2.2)
- Suitable for use where modified bitumen is required

RARX® enables compliance with UNE EN 12591 in terms of final performance.

Note 4

Minimum ELT content recommendations:

- Improved mix → 8–12% ELT → **0.55% RARX**
- Modified mix (BBTM) → 12–15% → **1% RARX**
- Highly modified mix (SMA) → 15–22% → **1.5% RARX**

Note 3

Due to the nature of rubber-modified bitumen, extraction and post-analysis are not possible.

Testing must be carried out beforehand using the mix design parameters.

RARX™
Turning waste into roads. Turning roads into returns.
RARX
Enhanced Elastomeric Asphalt Extender