

FACT SHEET

RUBBERISED ASPHALT

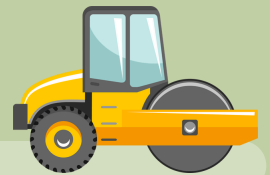
Why it should be used more



WHAT IS ASPHALT

Asphalt is a mixture of aggregates, binder and filler, used for constructing and maintaining roads, parking areas, railway tracks, ports, airport runways, bicycle lanes, sidewalks and also play- and sport areas. Aggregates used for asphalt mixtures could be crushed rock, sand, gravel or slags. In order to bind the aggregates into a cohesive mixture a binder is used. The most used binder is bitumen.

To be able to provide the best performance to different applications, a large variety of asphalt mixes can be used. To meet different requirements (amount of traffic, numbers of heavy vehicles, temperature, weather conditions, noise reduction requirements, etc.)



RUBBERISED ASPHALT

First used back in the 1950's in the USA its use there has become ever more popular due to the material's superior performance characteristics. In Europe however we have struggled for several decades to move beyond just trials and demonstrations of the material's despite its clear benefits although public and professional awareness has been grown up.

Rubberised asphalt mixes are not only proven to be technically viable but deliver better performance and sustainability as many countries using this material have shown. Yet, resistance to its wider commercialisation remains.



For more information, your questions and suggestions

- www.re-plancitylife.eu
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WHAT IS ASPHALT (CONTINUATION)

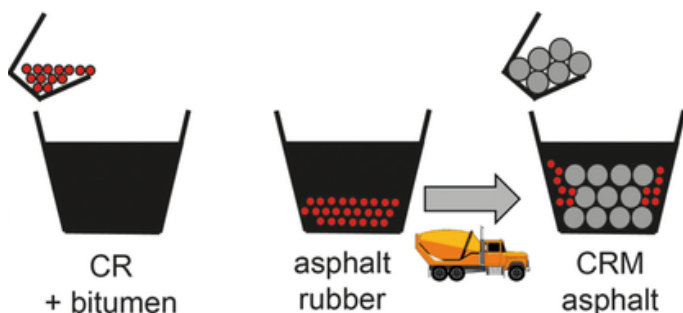
The respective mix used needs to have a sufficient stiffness and resistance to deformation in order to cope with the applied pressure from vehicle wheels on the one hand, yet on the other hand, they need to have an adequate flexural strength to resist cracking caused by the varying pressures exerted on them (E.A.P.A).

WET AND DRY

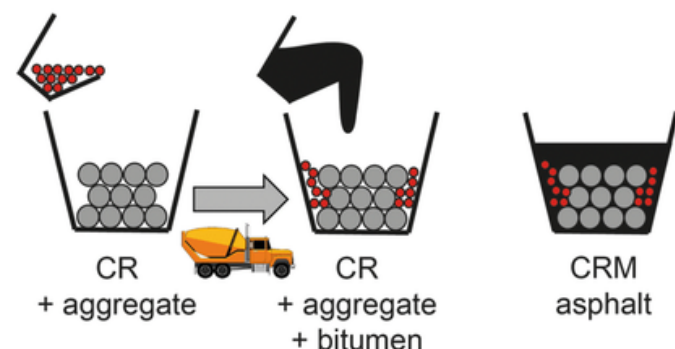
Recycled rubber in powder grades can be added to hot bitumen (**wet method**) and then mixed with aggregates, while rubber granulate can be mixed directly with other aggregates (**dry method**). According to the process and the mix design it is possible to optimize its performance characteristics.

The dry method is the easiest and more cost effective as it adapts well and to its use my standard road laying equipment.

WET PROCESS



DRY PROCESS



BETTER PERFORMANCES

Many years of experience around the world has shown that rubberized asphalt performs better from every point of view:

- Reduces Thermal Cracking
- Reduces Rutting
- Reduces Reflective Cracking
- Reduces Ice Disbonding
- Reduces Flushing
- Reduces Noise 3 - 5dB
- Increases Aging Resistance
- Increases Chip Retention
- Increases Flexibility
- Increases Ravelling
- Improves Surface Texture.
- Improves Fatigue Resistance



Lubbock, Texas -1985
(Before and after 15 years of Rubberised Asphalt)



RE-USABLE AFTER END OF LIFE

Rubberized asphalt, as well as normal asphalt is recyclable many times over just like normal asphalt - so-called Recycled Asphalt Pavement (RAP). The performance of RAP is equal to virgin asphalt. Owing to its better performance, however, rubberized asphalt would further encourage the wider use of RAP.



HUGE POTENTIAL MARKET

The asphalt market is huge and capable of absorbing large quantities of recycled rubber:

- 1 Tonne of Asphalt mix contains about 5% of binder = 50 kg bitumen
- In the WET Method we can use (mix) 5-20% rubber powder in the binder (between 2,5 to up to 10 kg of rubber powder per ton of asphalt mix). Optimum content is 15% of rubber powder in the binder.
- In the DRY Method we can use 1-3% coarse rubber by weight of the total mixture is added to the aggregate gradation (between 10 to up to 30 kg of rubber per tonne of asphalt mix)
- 212.5 million tonnes of all asphalt mixes are produced In the EU-27 (data 2022 E.A.P.A.), so they can be used from 531.250 to 6.375.000 tonnes of Rubber Powder / Granulate

These data show that even a small additions of Rubber Powder / Granulate in road asphalt in just 10% of the EU asphalt market would allow the beneficial recycling or between 2% to 20% of the annual European post consumer tyre arisings, depending on method and mix design.



NO ADDITIONAL RISK TO HEALTH

Rubberized asphalt does not pose additional concerns for health risks of workers compared to traditional asphalts. The process to produce asphalt mix is the same. The concentration of PAH in rubber is even lower than in bitumen.



POSITIVE SOCIAL IMPACT

Roads using recycled rubber asphalt improve road safety and deliver higher quality standards in the urban environment with reduced road noise, without cracking, potholes and other types of damage which contribute to urban decay and social discomfort. It would also stimulate a positive attitude towards circular cities policy and practices.



The difference between a conventional asphalt and rubberized asphalt without spray water



GOOD FOR THE ENVIRONMENT

Every year 4,2 Millions Tonnes of EOL Tyre arise in the EU, Norway, Switzerland and UK. It is important that these quantities be recycled in Europe in a sustainable way, like infill material production.

Rubberized Asphalt has many environmental benefits:

- It could be an important local market for recycled rubber
- It would reduce the quantity of virgin aggregates of which there is worldwide scarcity
- It will contribute to CO2 reduction, thanks to less maintenance works
- It would reduce the emission of tyre wearing particles thanks to better tyre adhesion
- It would reduce the emission of road wearing particles thanks to the longer surface duration



RUBBERISED VS TRADITIONAL ASPHALT



The adoption of rubberized asphalt depends on the willingness of road authorities and contractors to introduce new products and solutions. Those who are reluctant to innovate tend to create and spread so-called “Contractors’ **Myths**” otherwise called urban legends, which are largely untrue. Here are some examples:

- We will ruin bitumen storage tanks
- We need special equipment
- Viscosity testing procedure is standard
- Asphalt mix blend design cannot be varied
- Pavement cannot be performed during night



Cracked Conventional Asphalt and Rubberised Asphalt after 3 years of use
Nea Makri (Athens)

RUBBERISED ASPHALT IN REALITY

The experience of contractors is in fact quite the opposite. There are of course some differences in the concrete mix preparation, but they can be easily managed. Here some points:

- Plant production reduction by approx.30%
- Increased binder content (1-3%) when we apply higher percentages of rubber powder in asphalt mixes
- Higher asphalt mix production temperatures
- Small projects have larger cost
- Application cost is similar to other modified mixes (SBS,EVA etc)
- Special care to maintain high temperature



KEY POINTS

Rubberized asphalt is:

- **Safer, environmental friendly, sustainable, in line with GPP and the Green Deal**
- **More durable, less aging and better performing than traditional asphalt**
- **On the long term is cheaper as benefits of longer durability and lower maintenance are higher than initial investment**
- **Recyclable and reusable**
- **Social positive**