



Asphalt-Rubber Binder and Pavement Rehabilitation Systems

Asphalt-Rubber Binder

Asphalt-rubber binder is produced by field blending and interacting a minimum of 15 percent granulated recycled tire rubber with liquid asphalt, at elevated temperatures, for a specific amount of time to produce a material that has improved temperature susceptibility (cold to hot range of performance), increased elasticity (flexibility) and is resistant to aging. Also, through this reaction between the liquid asphalt and recycled tire rubber we see a significant increase in viscosity (thickness). The viscosity is the key to a heavier application rate in asphalt-rubber spray applied systems (chip seal) and an increase in binder content in asphalt-rubber hot mix materials (paving). Both of these applications can then be used on roads and streets that are in poor condition that would normally require a more expensive alternative to solve the maintenance problem.

Stress Absorbing Membrane (SAM) – Chip Seal

The SAM application provides a long-lasting waterproof membrane which has the ability to “flex” with heavy traffic, pavement movement and weather changes. The asphalt-rubber binder is “sprayed” at a pre-determined rate, which is normally twice the thickness of conventional binder and is then covered with 3/8 to 1/2 inch pre-coated aggregate (rock). The SAM application is ideal for the rehabilitation of pavement surfaces that are experiencing different types of problems (cracking, pot holes, etc.). (*Use Chip Seal Train Picture*)

Stress Absorbing Membrane Interlayer (SAMI)

The SAMI is similar in application to the SAM, except that the SAMI is followed by the construction of an additional layer, which could consist of a hot mix overlay or other type of finished surface.

Scrub Seal

The Scrub Seal application is similar in application to the SAM except that the application rate is much lower and the binder material is squeezed into the cracks during the application process.



Asphalt-Rubber Hot Mix – GapGraded

Gap Graded hot mix as compared to conventional hot mix utilizes asphalt-rubber binder at higher contents (7 to 8.5 percent vs. 4.5 to 6 percent). The resulting hot mix material has the capacity to seal badly cracked pavements and prevents moisture from entering the sub-grade. These types of hot mixes provide a more durable and flexible pavement with increased resistance to cracking, deformation (rutting) and oxidation (aging). Tire noise is also greatly reduced while skid resistance is increased. *(Use Paving Train Picture and / or the Aggregate Comparison Picture)*

Asphalt-Rubber Hot Mix – Open Graded

Open Graded hot mix, using asphalt-rubber binder presents a solution to durability problems associated with conventional open graded mixtures. The high viscosity (thickness) of the asphalt-rubber permits the use of even higher binder contents (8 to 10 percent). The benefit of thicker aggregate (rock) coating, results in a hot mix material that is more durable and moisture resistant. The high softening point and toughness of the asphalt-rubber binder impart improved mixture stability (resistance to rutting) and abrasion resistance. Tire noise is likewise greatly reduced and skid resistance is increased. *(Use ARPG Core for Picture)*

Two and Three Layer Systems

These multi-layer systems encompass the use of an asphalt-rubber SAMI and either the gap or open graded hot mix material as the final wearing course. The significance of use is that these systems can rehabilitate badly deteriorated pavements, avoiding costly reconstruction, which would normally be required.