

SPONSORED CONTENT

Enabling sustainable practices through performance-based innovations

The asphalt industry continually strives to incorporate sustainable practices that improve performance and reduce the environmental impact while remaining cost competitive. One growing area is increasing recycled content in pavement projects, not just in the base layer but in the top layer as well.

The primary mode asphalt pavement producers have used to incorporate more recycled content into their pavement is to add soft asphalt, or flux, to the mixture to offset the effects of oxidation and aging. Another approach commonly used has been to use additives that “soften” the aged asphalt. Unfortunately, these methods have proven problematic because they lead to rutting in the finished pavement and other performance issues.

“Our approach was to find a way to increase recycled content in asphalt pavement that meets standard performance specs.”

“Asphalt oxidizes as it ages, becoming more brittle,” said Robert Neumann, Cargill Industrial Specialties (CIS) North American Asphalt Commercial Lead. “As a result, using higher levels of recycled content in ‘new’ pavement makes the end product stiffer—and the stiffer it is, the more susceptible it is to cracking.”

“Softening asphalt doesn’t tackle the real problems of cracking and rutting,” Neumann said. “Our approach was to find a way for manufacturers to increase recycled content to produce an asphalt pavement that meets standard performance specs—even up to 100-percent-inclusion rates.”

How Cargill’s Anova™ asphalt rejuvenators work

Virgin asphalt consists of different chemical fractions, or building blocks, according to Hassan Tabatabaee, Ph.D. Anova Asphalt Solutions Global Technical Manager. Each building block plays an integral role in creating stable, durable and high-performing asphalt pavement. Aging “unbalances” these fractions and disrupts the bitumen’s chemical structure.

“We were able to rebalance the chemical composition of the aged bitumen by replenishing the affected chemical fractions with a carefully engineered, stable, biobased additive,” Tabatabaee said. “Our proprietary additive efficiently reestablishes the chemical balance and the functionality of the aged bitumen.”



The left side of the road was paved with 45% RAP, 5% RAS and Cargill’s Anova™ Rejuvenator. The right side of the road was paved using only 20% RAP.

Unlike many other known additives manufacturers have used to try to soften aged asphalt, these proprietary additives truly rejuvenate aged asphalt and restore desired characteristics. Anova rejuvenators incorporating high inclusion levels of RAP have passed internal laboratory tests and independent third-party testing for cracking, fatigue and rutting.

“Some of our customers are reporting that their customers like the rejuvenated asphalt better than their previous mixes,” Neumann said. “It’s easier to handle and compact; it looks better—blacker—and it resists aging better.”

Reducing raw material costs also improves sustainability practices

Asphalt mixes incorporating higher recycled content with Anova rejuvenators can reduce the raw material costs of asphalt mixes up to 25 percent. At the same time, these mixes diminish demands for newly mined sand, gravel and rock and help eliminate the problems of growing stockpiles and the use of recycled content in low-value uses such as fill. It also opens the door to a new level of sustainability around the production of asphalt.

Ultimately, Anova rejuvenators support the industry’s sustainability efforts by enabling even higher incorporation levels of recycled content that meet performance criteria and a money-saving solution that can serve the asphalt pavement industry for the foreseeable future.

