

Information Series 138

Asphalt Pavement Industry Survey on Recycled Materials and Warm-Mix Asphalt Usage 2015



6th Annual Survey



Asphalt Pavement Industry Survey on Recycled Materials and Warm-Mix Asphalt Usage: 2015

Executive Summary

The results of the asphalt pavement industry survey for the 2015 construction season show that asphalt mix producers have a strong record of employing sustainable practices and continue to increase their use of recycled materials and warm-mix asphalt (WMA). The use of recycled materials, particularly reclaimed asphalt pavement (RAP) and reclaimed asphalt shingles (RAS), conserves raw materials and reduces overall asphalt mixture costs, allowing road owners to achieve more roadway maintenance and construction activities within limited budgets. WMA technologies can improve compaction, ensuring pavement performance and long life; conserve energy; reduce emissions from production and paving operations; and improve conditions for workers.

The objective of this survey, first conducted for the 2009 and 2010 construction seasons, was to quantify the use of recycled materials, primarily RAP and RAS, as well as the production of WMA by the asphalt pavement industry. For the 2015 construction season, the National Asphalt Pavement Association (NAPA) conducted a voluntary survey of asphalt mixture producers across the United States on tons produced, along with a survey of state asphalt pavement associations (SAPAs) regarding total tons of asphalt pavement mixture produced in their state.

Asphalt mix producers from 48 states and one territory completed the 2015 construction season survey. A total of 214 companies/branches with 1,119 plants were represented in the survey.

The following are highlights of the survey of usage during the 2015 construction season:

- Asphalt mixture producers remain the country's most diligent recyclers, with more than 99 percent of asphalt mix reclaimed from old asphalt pavements being put back to use in new pavements.
- The total estimated tons of RAP used in asphalt mixes reached 74.2 million tons in 2015. This is a nearly 3 percent increase from the 2014 construction season, and represents a greater than 32 percent increase from the total estimated tons of RAP used in 2009. During the same time frame, total tonnage increased only 1.8 percent.
- The percent of producers reporting use of RAP decreased slightly from 100 percent of respondents in 2014 to 99 percent in 2015. Three producers reported landfilling a small amount of RAP during 2015.
- RAP usage during the 2015 construction season is estimated to have reduced the need for 3.7 million tons (21 million barrels) of asphalt binder and nearly 70.5 million tons of aggregate, with an estimated value in excess of \$2.4 billion.
- The total estimated amount of RAP stockpiled nationwide at the end of the 2015 construction season was 85.1 million tons.
- Fractionated RAP represents about 23 percent of RAP use nationwide, and the tons of RAP mixtures produced using softer binders are estimated at 24 percent while tons produced using rejuvenators is estimated at 3 percent.
- The total estimated tons of RAS used in asphalt mixes decreased slightly (1.6 percent) to an estimated 1.93 million tons in 2015. Still, the use of RAS in the 2015 construction season increased 175 percent from the estimated 701,000 tons used in asphalt mixtures in 2009.

- RAS usage during the 2015 construction season is estimated to have reduced the need for 386,200 tons (2.1 million barrels) of asphalt binder and nearly 965,500 tons of aggregate, with an estimated value of about \$194 million.
- Other recycled materials commonly used in asphalt mixtures during the 2015 construction season were ground tire rubber, blast furnace slag, steel slag, and cellulose fibers. Less commonly used recycled materials in asphalt mixtures included fly ash and foundry sand.
- The estimated total production of WMA for the 2015 construction season was 119.8 million tons. This was a greater than 5 percent increase from the estimated 113.8 million tons of WMA in 2014, and a more than 614 percent increase from the estimated 16.8 million tons in the 2009 construction season.
- WMA made up about one-third of the total estimated asphalt mixture market in 2015.
- Plant foaming, representing 72 percent of the market, is the most commonly used warm-mix technology; chemical additive technologies accounted for a little more than 25 percent of the market.