

Information Series 138

Asphalt Pavement Industry Survey on Recycled Materials and Warm-Mix Asphalt Usage 2014



Asphalt Pavement Industry Survey on Recycled Materials and Warm-Mix Asphalt Usage: 2014

Executive Summary

The 2014 survey results demonstrate that the asphalt pavement industry continues to improve its outstanding record of sustainable practices by further increasing the use of recycled materials and warm-mix asphalt (WMA). The use of recycled materials, particularly reclaimed asphalt pavement (RAP) and reclaimed asphalt shingles (RAS), conserve raw materials and reduce overall asphalt mixture costs while WMA technologies improve conditions for 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 was to quantify the use of recycled materials, primarily RAP and RAS, and WMA produced by the asphalt pavement industry. The National Asphalt Pavement Association (NAPA) conducted a voluntary survey of asphalt mixture producers in the United States and of state asphalt pavement associations (SAPAs). The survey was broken into five sections: general information, RAP, RAS, WMA, and other recycled materials. Asphalt mix producers from all 50 states completed the 2014 survey. A total of 228 companies/branches with 1,185 plants were represented in the 2014 construction season survey.

The following are highlights of the 2014 survey:

- The asphalt industry remains the country's most diligent recycler, recycling asphalt pavements at a rate of greater than 99 percent. All contractors/branches responding to the survey reported using RAP in 2013 and 2014. The average percent of asphalt used for all mixes has seen a steady increase of about 1 percent per year since 2009. The total estimated amount of RAP used in asphalt mixtures was 71.9 million tons in 2014, a 28 percent increase over the tons used in 2009 (56 million tons). This is a 6 percent increase over the tons used in 2013 (67.8 million tons). Assuming 5 percent liquid asphalt in RAP, this represents over 3.6 million tons (20 million barrels) of asphalt binder conserved. Use of RAP also reduced the need for some 68 million tons of virgin aggregate. The amount of RAP landfilled was at 0.17 percent, which is in line with previous years.
- Use of both manufacturing waste and post-consumer shingles in asphalt mixtures increased to an all-time high of nearly 2 million tons in 2014, nearly a 20 percent increase from 2013 (1.6 million tons). Assuming a conservative asphalt content of 20 percent for the RAS that may be used to replace virgin binder, this represents 400,000 tons (2.2 million barrels) of asphalt binder conserved, along with 982,000 tons of aggregate. Since the 2012 survey, the amount of scrap shingles collected has been less than the amount used. Contractors contacted on this issue have reported that they either have shingles stockpiled or are buying RAS from shingle processors.
- The combined saving of asphalt binder (\$550/ton) and aggregate (\$9.50/ton) by using RAP and RAS in asphalt mixes is more than \$2.8 billion. This keeps asphalt pavement mixture costs competitive and allows owners to achieve more roadway maintenance and construction activities within limited budgets.
- Information on other recycled materials was obtained for the third time in this year's survey. The most commonly used other recycled materials in asphalt mixtures were blast furnace slag, steel slag, ground tire rubber, and cellulose fibers. Less commonly used recycled materials included fly ash and foundry sand.
- Total tonnage of WMA was estimated at 113.8 million tons during 2014. This is nearly a 7 percent increase over 2013 WMA tonnage (106.4 million tons). As of 2014, WMA is now about one-third of the total asphalt mixture market. Plant foaming is used most often in producing WMA, with more than 84 percent of the market; additives accounted for about 16 percent of the market.