

RECYCLED PLASTICS IN ASPHALT PAVEMENTS

Fund Research into the Safe and Economical Use

Lawmakers Must Act

To understand the performance, safety, health, the environment, and economics when designing and building an asphalt pavement, engineers need lawmakers to fund research that evaluates the reuse of plastic waste in our nation's pavement structures.

Background

According to Federal Highway Administration (FHWA) Recycled Materials Policy “recycled and reused [materials] can offer engineering, economic, and environmental benefits.”¹ However “determination of the use of recycled materials should include an initial review of engineering and environmental suitability” and “an assessment of economic benefits.”

The asphalt industry has a six-decade history of using recycled materials. In fact, the most recycled product by weight annually is reclaimed asphalt pavement (RAP). Using recycled materials requires research, field studies, experimental projects, and long-term performance testing and analysis. Some recycled materials have a demonstrated track record; however, the reuse of plastic remains an area for further research to understand the engineering, economic, and environmental impacts.

Engineering

A survey of roadway owners defined performance (durability and longevity) as the number one priority. Asphalt mixtures are engineered to give owners and the driving public a smooth and durable pavement which is safe to drive on. As recycled materials are introduced to asphalt mixtures, engineers must understand the



impacts of the reused material which can either improve or hurt the performance of a roadway. Before full implementation, a data-driven analysis on the impacts of plastics on the long-term performance

of asphalt mixtures is required. Luckily, the United States Congress in the FAST Act required that state Departments of Transportation report to FHWA the performance of their federally funded roads on an annual basis. This data aggregated over [a time period] provides engineers with the data-driven approach and lawmakers with the confidence to fully implement the use of reused materials in asphalt pavements.

¹Wright, F. (2015, September 8). FHWA Recycled Materials Policy. Federal Highway Administration. <https://www.fhwa.dot.gov/legisregs/directives/policy/recmatpolicy.htm>

Economics

Not all plastics are recyclable. Plastic requires processing and cannot be taken from the recycling bin and put it into asphalt. The successful use of plastics requires proper acquisition, sorting, cleaning, and packaging. The recycling process will come at a cost, increasing the near-term cost of asphalt mixtures. Requiring engineers to determine if plastics increase the life of asphalt pavements before these additional costs negatively impact our infrastructure's economics.



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Environment

Eco-consciousness requires consideration of the natural and built environment. How recycled materials impact asphalt plant emissions as well as the health and safety to the workers producing and placing these materials are of engineering concern. These questions must be answered to determine if recycled plastics in asphalt are a solution to climate change and human health issues.

Moving Forward

As we move forward to determine if it is responsible to recycle plastic in asphalt pavements, we must focus on three things: patience, partnerships, and communication. We must know that answers will not come overnight, but through working together and sharing our successes and failures, the industry will be able to more fully understand how recycled plastics in asphalt mixtures might impact our infrastructure in the long-term.

