

Overcoming Barriers to Asphalt Shingle Recycling (Phase Three)



Recycled
Materials
Resource
Center



University of New Hampshire



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Federal Highway Administration

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Project Objectives

- Improve awareness and attitudes of product buyers through strategic information /technology transfer and to build further cooperation between the waste management and pavement industries.
- Improve the understanding about the economic and technical advantages of using shingle scrap in various road construction materials.
- Assist with the development of more advanced collection and processing systems for TOSS.
- Identify and develop necessary leadership within both the public and private sectors.
- Field test the end-product applications of TOSS leading to the recommendation of standard recycled material specification(s).
- Develop and implement a TOSS field sampling and lab testing protocol to provide sufficient data about environmental suitability.
- Institute a technology transfer service that can be sustained over a longer time frame, beyond the period of this Phase Three project.

Project Progress

Asphalt roofing shingles are composed of asphalt binder and high quality ceramic aggregate, similar in nature to hot mix asphalt (HMA). It seems reasonable that post-consumer shingle material, otherwise known as tear-off shingle scraps or TOSS, could be added to HMA as a beneficial use application. In fact, scrap shingle material from shingle man-ufactures is already used in hot mix asphalt is several parts of the coun-try as a way to reduce costs due to decreased use of asphalt binder and mined aggregate. However, roughly 11 million tons of TOSS is generat-ed each year in the U.S. from re-roofing projects and most of it goes into landfills. Mr. Krivit and Minn-esota DOT (Mn/DOT) are working on the last phase of a three phase effort to reduce the amount of TOSS thrown away each year by removing barriers to shingle recycling. The main objectives that must be met to achieve this goal are: improvement in the awareness and attitudes of product buyers, improve-ment in the understanding about the economic and technical advantages of using recycled shingles in



A handful of recycled asphalt shingles.

various road construction materials, and development and implementation of a field sampling protocol for used roofing shingles (if needed). Working with Chesner Engineering (See Project 13/14), the PI developed a white paper and draft specification for recycled shingles in HMA. The draft specification was presented at the Second Asphalt sponsored in part by the RMRC and adopted as two provisional specifications (see End Products below). Mr. Krivit has also been monitoring three pilot scale dem-onstration projects for beneficial use applications for TOSS and the results will be posted on the RMRC website. One item of note will be a cost analysis done on data collected from HMA producers. This analysis will quantify some of the avoided costs that are achieved using decreased amounts of asphalt binder and aggregate. The PI has also been working on the related *Manufactured Shingle Scrap Recycling Project*, an effort that seeks to market shingle recycling as an emerging business opportunity.

Project Partners

Minnesota Office of Environmental Assistance, Minnesota Local Road Research Board, SKB Environmental, Bituminous Roadways, Inc.

End Products

Forum on tear-off shingle scrap (TOSS) recycling; TOSS material specification to Mn/DOT; two AASHTO specifications.

Further Information

The Recycled Materials Resource Center (RMRC), a cooperative agreement between the University of New Hampshire, the University of Wisconsin-Madison, and the Federal Highway Administration, is a national center that promotes the appropriate use of recycled materials in the highway environment. Its focus is on the long-term performance and environmental implications of using recycled materials.

For the final report, please see <http://www.rmrc.unh.edu/Research/past/P22/P22final.pdf>.