EXPERIMENTAL INVESTIGATION OF THE RE-RECYCLING
OF RAP IN ASPHALT PAVEMENT

D. Wang & A. Cannone Falchetto
Department of Civil Engineering, Braunschweig Pavement Engineering Centre,
Technische Universität Braunschweig, Braunschweig, 38106, Germany

K.H. Moon
KEC Research Institute, Korea Expressway Corporation, Dongtan, 18489,
South Korea

C. Riccardi & M.P. Wistuba
Department of Civil Engineering, Braunschweig Pavement Engineering Centre,
Technische Universität Braunschweig, Braunschweig, 38106, Germany

ABSTRACT
In this paper, the possibility of repeated recycling (re-recycling) of reclaimed asphalt pavement (RAP) is evaluated, the low, intermediate and high temperature properties are experimentally tested, especially for the low temperature properties, since the aging procedure leads to more stiff and brittle materials. First, a virgin asphalt mixture with asphalt binder PG 58-28 and maximum aggregate size equal to 12.5mm was prepared. Then, the virgin mixture was artificially aged to simulate the different generations of recycled materials. Next, 20% and 40% of artificial RAP was used to prepare a set of mixtures under different recycling conditions and two levels. Fatigue, resistance against rutting, creep stiffness, relaxation modulus, and low temperature fracture energy and fracture toughness were computed and evaluated on the entire set of the virgin, recycled and re-recycled mixtures. Both recycled and re-recycled materials show similar rutting resistance properties and fatigue behavior. Higher stiffness and reduced relaxation properties were observed for the re-recycle mixture compared with the recycled materials. The present experimental study provides evidence on the possibility of investigating repeated recycling of RAP.