

Optimizing the durability of the coarse fraction of porous asphalt RAP for effective recycling

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Abstract. Porous asphalt (PA) durability depends not only on the binder used to manufacture the mix, but also on the aggregates chosen, particularly the coarse fraction component. Aggregates for PA should be of the highest quality and highly durable to withstand the effects of weather and traffic. To recycle PA into a new PA mix, without compromising the long-term performance, the durability of the recovered aggregates from PA-derived reclaimed asphalt pavement (RAP) should be assessed alongside the aged binder properties. In this study, the Micro-Deval (MD) Abrasion test, combined with water absorption, was found to be a good predictor of asphalt mix performance for PA. Minerology of the aggregates is an important factor when setting limits for MD loss. New Zealand (NZ) aggregates are significantly younger in geological terms, and chemically and physically less stable compared to the aggregates used in many other countries. This is especially true for greywacke, the most used aggregate in NZ for road construction. If the MD limits reported in some literature are applied to NZ PA-derived RAP aggregates, poor performing material can be erroneously incorporated in asphalt mixes. Findings from this study contributes in understanding how PA-derived RAP can be recycled into new value PA mixes.