RECycled waste plastic modification of bituminous binder

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ABSTRACT
Two waste plastic products for asphalt binder modification and extension, known as MR 6 and MR 10, were added to penetration-grade bitumen in the laboratory. The samples were tested for the index properties contained in the British modified binder specification, as well as high temperature Performance Grading. The investigation included 50/70 and 100/150 penetration grade bitumen with 4-8% (by mass) waste plastic content, tested at 52-82°C. Waste plastic modification significantly improved the high temperature Performance Grading. The harder 50/70 penetration grade bitumen produced a harder modified binder and the difference between 4% and 6% waste plastic content was significantly greater than the difference between 6% and 8%. The MR 6 modified binder was more elastomeric and had greater resistance to deformation than MR 10. Further research is recommended to compare the properties of wet blended and dry mixed production methods.