WHITISH AND RUSTY STAINS ON BITUMINOUS WEARING COURSE: POSSIBLE CAUSES

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ABSTRACT
During the past few years, several road pavements in Romania have been affected by both whitish, light-coloured, as well as rusty stains which appear on the surface of the bituminous wearing course. This particular distress appears as a fine powder on the surface of the mastic-coated aggregates, joined by water seepage in some cases, leading to progressive stripping and potholes. Scientific research and performed investigations considered several possible causes, such as: ascensional water, bitumen distillation, bitumen biodegradation by microorganisms, cyclic hydraulic actions, acid rains and chemical degradation of aggregates. The last two were indicated as the most plausible reasons the analysed distress appears. Laboratory studies, including specific asphalt tests, microscopic analyses and X-ray diffractions, suggested that chemical reactions occur between aggregate minerals and acid rains, leading to calcium carbonate (whitish stains). The rusty stains seem to have been caused by iron sulfides reacting with water.