

Environmental Potentials within the Production of Asphalt Mixtures

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Abstract : The paper shows examples for the (environmental) optimization of production processes for asphalt mixtures applied for typical road pavements in Austria and Switzerland. The conducted "from-cradle-to-gate" LCA firstly analyzes the production one cubic meter of asphalt and secondly all material production processes for exemplary highway pavements applied in Austria and Switzerland. It is shown that environmental impacts can be reduced by the application of reclaimed asphalt pavement (RAP) and by the optimization of specific production characteristics, e.g. the reduction of the initial moisture of the mineral aggregate and the reduction of the mixing temperature by the application of low-viscosity and foam bitumen. The results of the LCA study demonstrate reduction potentials per cubic meter asphalt of up to 57 % (Global Warming Potential–GWP) and 77 % (Ozone depletion–ODP). The analysis per square meter of asphalt pavement determined environmental potentials of up to 40 % (GWP) and 56 % (ODP).

Keywords : asphalt mixtures, environmental potentials, life cycle assessment, material production

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