

ABSTRACT

The BAT (Best Available Techniques) Knowledge Center, established by the order of the Flemish Government and housed at VITO, is tasked with inventorying, processing, and disseminating information on environmentally friendly techniques. Additionally, this knowledge center advises the Flemish government on operationalizing the concept of 'Best Available Techniques' (BAT). This report provides a comprehensive overview of the BAT for asphalt production plants.

The selection of BAT and the provision of advice are grounded in a socio-economic sector study, cost calculations, a comparison with foreign regulations and documentation, company visits, and consultations with representatives of federations, suppliers, specialists from the administration, and other experts. The formal consultation occurred in a Steering Committee (SC), comprising representatives from the sector, government, and other experts. This SC convened four times: 04/05/2022 (SC n°1), 09/12/2022 (SC n°2), 12/09/2023 and 03/10/2023 (SC n°3), and 17/01/2024 and 31/01/2024 (SC n°4). Concurrently, a panel of external lecturers with diverse expertise reviewed the study. Details on the composition of the steering committee and the external lecturers are available in Annex 1.

The study's scope, determined in consultation with the steering committee, focuses on the production process of asphalt and the technical specifications of an asphalt plant. Excluded from the scope, due to their distinct operational characteristics, are the production of cold asphalt, the heating system for the storage tanks of warm bitumen, and mobile asphalt plants.

Most techniques identified as BAT aim to prevent or minimize air emissions, aligning with the sector's high degree of circularity, facilitated using asphalt granulate (AG). In Chapter 4, 69 techniques are described as candidate BATs. After evaluation in Chapter 5, 42 techniques were retained as BAT. The application of environmental management, optimized processes, and the monitoring of process parameters are highlighted as preventive techniques that enhance the overall environmental performance of asphalt plants. The study also underscores the importance of minimizing material loss and promotes the circular economy by advocating for the reuse and use of alternative raw materials, without compromising quality.

In the context of limiting air emissions, various techniques are recommended, ranging from dust filtration to systems for controlling volatile organic compounds (VOCs) and combustion gases. A key focus of this BAT study was the extensive investigation of indirect heating of asphalt granulates. This involved examining aspects such as technical feasibility, proven effectiveness, potential emission reductions, and costs. The technique of a parallel drum with a separate combustion chamber through a hot gas generator has been assessed as BAT, allowing for significant reductions in all air emissions. Emerging in Europe, this new technique also reduces odor nuisance while maintaining the processing of asphalt granulate – a critical component for the sector's circularity. For converting directly fired asphalt plants to a system of indirect heating, a transition period of 7 years is envisaged. Currently, the separate combustion chamber via a hot gas generator is BAT, but future developments may yield even better alternative techniques.

Energy efficiency is promoted through improved moisture regulation, better insulation, and the reduction of heat loss. Electric asphalt production is acknowledged as an emerging technique with potential for the future, both in reducing energy consumption and further limiting emissions to the air. Noise pollution is addressed through standard measures such as transport planning, silencers, quieter equipment, and encapsulated compressors. In terms of soil and water management, no significant problems have been observed, given the limited water use and adequate drainage systems at asphalt plants. Chapter 5 identifies BAT-AEL for various air parameters: CO, dust, SO₂, NO_x, TOC, benzene, and

PAHs (see Table 19). Chapter 6 presents the new sectoral emission limit values (ELVs, see Table 20). During the preparation of the BAT study, some knowledge gaps and areas for improvement were identified, such as the influence of disintegrated asphalt on air emissions, the consultation of emission data, and the monitoring of benzene and PAHs. A specific recommendation is to initiate a pilot project for the potential implementation of continuous TOC measurement. These suggestions for follow-up research are also discussed in Chapter 6.