

BEST AVAILABLE TECHNIQUES TO RECOVER THE FERROUS AND NON-FERROUS FRACTIONS FROM THE BOTTOM ASH

The Centre for Best Available Techniques (BAT) is founded by the Flemish Government, and is hosted by VITO. The BAT centre collects, evaluates and distributes information on environment friendly techniques. Moreover, it advises the Flemish authorities on how to translate this information into its environmental policy. Central in this translation is the concept “BAT” (Best Available Techniques). BAT corresponds to the techniques with the best environmental performance that can be introduced at a reasonable cost.

About 1.2 million ton of waste is incinerated yearly, of which approximately 70 weight % municipal solid waste. The incineration process results in a yearly production of 230000 ton bottom ash. In Flanders there are two treatment facilities for the treatment of these bottom ashes: one is operated by Indaver and treats nearly 100 000 ton/year by a wet process, the other is operated by SITA (VALOMAC) and treats bottom ashes coming from Flanders, Wallonia and Brussels by a dry process. The latter installation has a capacity of 250 000 ton/year. The bottom ashes of two Flemish waste incinerators (Eeklo and Houthalen) are treated abroad, i.e. respectively in the Netherlands and in Germany.

It is considered Best Available Practice (BAT) to recover the ferrous and non-ferrous fractions from the bottom ash. To improve the environmental as well as building technical characteristics of the bottom ash is BAT to fractionate the bottom ashes in a wet or dry process followed by natural or accelerated carbonation of the ash.

For the fine bottom ash fractions, which result from the wet or dry fractionation process, there are several possible recycling and disposal routes: e.g. mixing of the fine fraction (or part thereof) with the coarser bottom ash fraction(s), sintering or immobilization of the fine fraction, or landfilling. The selection of one of these recycling or disposal routes largely depends on the local market conditions and local environmental regulations and policy.

The use of bottom ashes in Flanders is regulated by the Flemish Regulations on Waste management, in short VLAREA. VLAREA regulates the use of all waste materials for which identical environmental standards have been developed. The environmental standards for use of bottom ash in the neighbouring countries, on the other hand, are often specifically developed for the use of bottom ashes in specific applications, such as base layer in road construction. Its use is often restricted to these applications and subject to extra safety measures to prevent contact with surface or infiltration waters. As a result the assessment of the environmental risks involved with the use of these ashes are not comparable. Because of the extra safety measures in the neighbouring countries the environmental standards for the use of the bottom ashes are less strict than those in place in Flanders.

The dry bottom ash treatment is the most widely used, and generally results in a bottom ash aggregate that in many countries can be used in the road construction industry. In Flanders, however, this type of treatment offers no guarantee that the treated bottom ashes will comply with the environmental VLAREA criteria for re-use. Even after treatment the leaching of copper will often remain problematic. The removal of organic matter seems especially important to solve this problem. Therefore the success of the dry bottom ash treatment seems to depend largely on the quality of the original bottom ash. Bottom ashes coming from an incinerator equipped with an afterburner seem to comply more easily with the environmental VLAREA standards, than bottom ashes derived from incinerators without such systems.

The BAT selection in this study was based on plant visits, a literature survey, a technical and socio-economic study, cost calculations, and discussions with industry experts and authorities, The formal consultation was organised by means of an advisory committee.

Full Dutch version available [here](#) (1084 Kb)

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