

ABSTRACT

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 environmental 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 of “BAT” (Best Available Techniques). BAT corresponds to the techniques with the best environmental performance that can be introduced at a reasonable cost.

The aim of this study is to identify BAT for the plastic processing industry. On the basis of the techniques selected as Best Available Techniques, recommendations are formulated with respect to the environmental permit legislation and the eco-investment support policy.

The plastic processing industry produces intermediary and final products in plastic. The polymer synthesis and the compounding, i.e. the mixing of the polymers with additives and auxiliaries, take place in the chemical industry. The plastic processing companies buy the readymade plastic material and execute only some pretreatment operations, such as storage and transport, dosing and mixing in master batches or production waste, pre-drying and grinding of production waste and/or residues. Then, the processing of the plastic takes place. This study covers the processing of thermoplastic material, the production of composites and the production of foams. Some mechanical operations may be executed on the resulting products. Furthermore the joining techniques, the printing, the laminating and the annealing are included in this study. The application of organic coatings is fully discussed in the BAT-study on metal processing. Finally, also the maintenance and cleaning of the machines is dealt with.

The major environmental effects associated with these activities are the emissions to air (mainly VOS), the production of waste and the use of raw materials and energy. The use of water, water and soil pollution and noise nuisance are less important.

In order to reduce the environmental impact of the processing of plastic 147 environmental friendly techniques are suggested in this study. After evaluation, 142 of them are selected as BAT. 39 are applicable to all companies that process plastics. Companies that process thermoplastic material can apply 50 BAT, for the production of composites 11 BAT are given, for the production of foam there are 19 BAT, for the mechanical operations 3 techniques are chosen and for the joining, printing and laminating operations 20 BAT are selected.

Techniques that reduce the air emissions from the plastic processing industry mainly aim at substituting solvents as cleaning agents in all processes, replacing VOS as blowing agents in the production of foam, substituting solvents in ink and adhesives and using resins that emit less styrene in the production of composites. In order to reduce the amount of waste a lot of techniques are presented, such as the use of reusable packaging, regular maintenance of the equipment and a good planning of the production. BAT to reduce the use of raw materials focus on the optimisation of the production process aiming at low waste production and as much reuse of process waste and residues as possible. The use of energy can be lowered by numerous measures. One of the BAT for the processing of thermoplastic material is to follow closely the control of the temperature cycle of the injection molding and extrusion machines. There are also a lot of possibilities to recover the heat of drying and cooling processes.

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, representatives

of the federations and authorities. The formal consultation was organized by means of an advisory committee the composition of which is given in Annex 1.