

Abstract

Production and Use of Air-Cooled Blastfurnace and Steel Slags

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Today the steel producing process can be considered as to consist of three stages:

- The reduction stage in the blastfurnace or as direct reduction process,
- the steelproduction stage in the BOF (LD)-process and in the electric arc furnace process, and
- the secondary steelmaking process.

From these stages result blastfurnace (BF) -slag, basic oxygen steelmaking (BOS) -slag and electric arc furnace (EAF) -slag, and secondary metallurgy processes (SMP) -slag.

To assess the importance of the different slags and the products produced in 2000 the European Slag Association EUROSLAG made a questionnaire by European steelworks.

In 2000 the total blast furnace slag amounted to 25 million tons. About 29 % of this tonnage have been produced as air cooled crystalline slag, 69 % as granulated and 2 % as pelletised slag. The utilisation rate is very high for blast furnace slags. Most European countries have a utilisation rate of 100 % or nearly 100 %. Only less than 2.7 % of the total amount is separately dumped to be processed later on. 55.9 % of the blastfurnace slags are used as granulated slag mainly for the cement production. 39.5% are used as crystalline slag for road construction and other building purposes. Only a little quantity is used as fertiliser (0.3 %) and other purposes.

Concerning steel slags the total amount was 16.8 million tons. About 59 % have been produced as BOS-slag, 28 % as EAF-slag and 13 % as SMP-slag. In opposite to the blastfurnace slags about 24 % still have been dumped. These slags mostly are fine-grained and therefore not applicable for building purposes. Main fields of application are the construction industry (51 %), metallurgical recycling (14 %) and the production of fertiliser (4 %).

The utilisation rate obtained until now underlines that slags are long-term approved products for varied fields of application. The slag industry will continue in using slags on a high level and in a manner which can be justified.

Biographical Details

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1972-1978 Technical University (TU) Darmstadt
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