Summary report on RTD in iron and steel slags: Development and perspectives

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Abstract

Over more than twenty years, ECSC has supported the research on application of iron and steelmaking slags. This research work has been necessary to convince authorities and customers that slags are valuable products, with sometimes much better properties as natural stones, used normally for such applications. Not only the mechanical and technical properties have been tested, also the environmental compatibility of these materials is being intensively investigated. To demonstrate that no harmful impacts to the environment occur by using slag products is one of the most urgent problems to meet in the future.

From the technical point of view, the main results of the research done until now are:

- Development of test methods and specifications for the use of slags on different kind of applications. There might be necessary additionally work in the future, especially in the frame of European standardisation, but a solid base is available.

- Iron and steel producers are beginning to accept that it is necessary to invest into the production of high quality slags, which will respect the rules negotiated with customers and authorities. Improved weathering and special treatments of liquid slags are investigated and entering into practice.

- The combination of iron and steel slags among themselves or with other by-products (bottom incinerator ash, glass cullets, etc.) can provide technical advantages in comparison with the separately use of each material. Such technical complementarities should be investigated more intensively, because they can provide new valorisation ways.

Owing to environmental restrictions expected in the future, more attention has to be drawn on new methods of slag treatment. Although blast furnace slags have nearly no problems due to heavy metal contents, there might arise problems owing to their sulphur content. For the steel slags, binding of tracer elements into stable slag phases is the most important research field for the future.

The use of iron and steelmaking slags will save natural resources and therefore will have economical and ecological benefits.