

Towards a Green World

JSW is a prominent cement producer. The company is also adopting various means to become environmentally friendly, and is now marketing slag as a product, says Lopamudra Sengupta - VR Technical, JSW Cement.

Slag is a byproduct from steel plants, which is obtained from blast furnaces, during the extraction of iron from iron ore. The process of granulating of the slag involves cooling of molten slag through high-pressure water jets. This rapidly quenches the slag and forms granular particles. The resulting granular material comprises around 95 per cent non-crystalline calcium-alumino silicates. The granulated slag is further processed by drying and then grinding in a vertical roller mill or rotating ball mill to a very fine powder, which is called Ground Granulated Blast Furnace Slag or GGBS.

The benefits, application and performance of GGBS are same as that of PSC. In case of PSC, predetermined dosage of GGBS is added, whereas GGBS separately combined with OPC, offers the flexibility of using any particular dosage depending on the choice of the user.

Some of the major advantages of GGBS concrete, as compared to pure OPC concrete or fly ash based concrete are given below:

- Reduced thermal cracks due to lower heat of hydration;
- Reduced shrinkage cracks;
- Improved workability and smooth finish;
- Improved cohesion;
- Better resistance against chemicals such as chlorides, sulphates and carbon dioxide;
- Higher long-term strength;
- Improved durability;

JSW GGBS also meets the requirements of IS: 12089-1989. It is also an eco-friendly green product. JSW GGBS can be used as a partial replacement to OPC cement in concrete production at RMC batching plants and site batching plants.

JSW PORTLAND SLAG CEMENT (PSC)

JSW PSC is a blended cement, wherein some portion of OPC is replaced with GGBS, to make the structures long lasting and durable. GGBS present in PSC helps in secondary hydration, producing more C-S-H gel in the system for

improved performance of concrete.

PSC can be used in all types of civil engineering works — in both structural and non-structural applications. In fact, it has got a wide spectrum of applications as compared to OPC. OPC is not suitable for works such as mass concrete, industrial structures, marine structures, effluent and sewage treatment plants. PSC is an ideal cement in these works, thus making it a perfect all-purpose cement.

PSC is also a sustainable material. As production of PSC ensures the conservation of natural resource (limestone), generates savings in energy in the production process and limits the emission of carbon dioxide, it is regarded as an eco-friendly cement or green cement.

The properties of PSC have been specified by BIS in IS: 455-2015. CII - IGBC has certified JSW PSC as a green product.

THE WAY AHEAD

The usage of blended products (PSC & GGBS) ensures a pollution-free environment, and ensures no adverse impacts on the health of nearby communities. Utilisation of slag and other byproducts minimises the burden on landfills and reduces virgin material usage, fossil fuel usage, and greenhouse emission reductions. Hence, it has a direct contribution to reversing the effects of global warming and climate change.

The products of granulated slag are regarded as environment friendly and durable materials that can protect the environment by limiting the exploitation of natural resources and reducing the amount of energy consumed in the mining of natural resources, helping in sustainable development.



ABOUT THE AUTHOR

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