

Solid Wastage Utilisation of Iron & Steel Industries

Pub: INS/146 , Price : 1500, Compiled by: Dr Jayanta Saha

Considering the growth potential of iron and steel industries in India, generation of huge amount of solid wastes and its utilization & safe disposal will be the major concern. Post Kyoto summit, environmental concerns have been taking the centre stage in every sector and steel industry definitely feels the heat. Ministry of steel, Govt. of India set target of 100% utilization of solid wastes. Under charter on Corporate Responsibility for Environmental Protection (CREP), steel plants are required to set mutually agreed target with the purpose to go beyond the compliance of regulatory norms for waste utilization. Probably the most fundamental changes are those of public attitude, awareness and acceptability with respect to waste. These changes are increasing applying pressure to minimize wastes, encourage waste recycling and demanding waste disposal as landfill to be the last option. Therefore serious efforts are needed to convert these solid wastes into reusable raw materials or products for various beneficial uses.

Reduce, reuse, and recycle are important techniques for waste management. These become significant for improving environmental and economic condition of industries. Integrated steel industries are generating huge amounts of steel slag as waste through the blast furnace and LD process. Presently, these wastes are disposed by dumping in an unplanned manner, which causes many environmental problems. The generation rate of slag produced from steel industries is found to be in the range of 150-200 kg per ton of steel production. The LD slag generated by the basic oxygen converter, is one of the waste which can be reused due to the presence of a considerable amount of valuable minerals. Slag is produced by action of various fluxes upon gangue materials during the process of pig iron making and steel making. Contrary to the earlier consideration that slag is a waste product, however, in the past couple of decades slag has emerged as a valuable by-product generated during iron and steel making. Primarily, slag consists of calcium, magnesium, manganese and aluminium silicates and oxides in various combinations.

As there is hardly any readily established applications of steel slags besides the internal usage as a replacement to Lime Stone as source of Calcium Oxide, efforts are being made to how best the material can be made usable with minimal hassles in the area of civil construction and other related applications. In line with the above, steel companies are putting special efforts to identify new avenues for steel slag utilisation, develop and customise the product as per customer's requirement, pursue statutory approvals and standards, establish and monitor quality assurance procedures.

For the purpose, the various steel slags were characterised to best suit in the civil engineering products and applications like cement making, aggregate making, as replacement to sand and also further enhancing internal applications.