Abstract:

1. Introduction

Global warming and environmental destruction have become manifest problems in recent years, heightening concern about global environmental issues, and a change-over from the mass-production, mass-consumption, mass-waste society of the past to a zero-emission society is now viewed as important. The iron and steel industry produces extremely large amounts of slag as byproduct of the ironmaking and steelmaking processes, and is therefore continuing to develop slag reduction and recycling technologies and intermediate treatment technologies.

The Japanese steel industry produces 36.58 million tons of iron and steelmaking slag in 2003. There are two main types of slag, blast furnace slag and steelmaking slag. The former is produced as byproducts in the process of manufacturing pig iron in the blast furnace, and the latter is byproducts of steelmaking processes in the basic oxygen furnace (BOF), electric furnace, and so on. The respective amounts of these two types are 24.35 million tons of blast furnace slag and approximately 12.22 million tons of steelmaking slag.

As useful recycled materials, iron and steelmaking slag are mainly used in fields related to civil engineering, for example, in cement, roadbed material, and concrete aggregate. Their recycling ratio is close to 100%, making an important contribution to the creation of a recycling-oriented society. However, public works projects, that is strongly related to recycled fields, tend to be reduced recently and, more over, other recycled materials, such as reused roadbed materials and fly ash, become competitor of slag in the fields. Thus, the development of new application technologies has become an urgent matter.

The JFE Steel Group has developed and sells the fol-sTw[op19we ma828

modulus of elasticity is somewhat smaller, that suggests Ferroform is a somewhat softer material than concrete. The abrasive coefficient is small, at approximately 1/2 that of concrete, so that excellent durability against wear due to drift sand in coastal environments can be expected. In addition, because Ferroform has dense structure with a small median pore size, it has the advantage of resistance to salt penetration.

The change in the pH of seawater after samples

With the completely filled asphalt-slag complexed pavement, the sound pressure level showed no difference from that with dense graded asphalt pavement, but with the partially filled pavement, the sound pressure level decreased by approximately 2db, showing that a noise reduction effect is maintained.

4.2 Test of Water-retaining Pavement on Actual Road

In Mar. 2002, water-retaining pavement has been laid out to improve the road environment at the East Exit Plaza from Chiba Station of East Japan Railway Company. The workability of the water-retaining material was satisfactory, and the road was reopened to traffic 2 h and 30 min after completion of the work. Partial filling (60%) of the voids in drainage-type pavement was performed. **Photo 5**