

Guidance on the Use of Steel Slag Aggregate

Edition 2010/1 – effective from 15 February 2010

Steel slag

Steel slag is produced as an inevitable by-product of producing steel. Fluxes (such as lime) are added in the steel making process to remove unwanted components from the steel. It is these fluxes and non-metallic components that combine to form steel slag.

After it has solidified and cooled, steel slag can be processed into aggregate products which can then be used in a variety of applications as a direct substitute for high specification natural aggregates.

The suitability of steel slag aggregate is very much dependant on it being properly processed in a carefully managed environment. Steel slag may contain un-hydrated (free) lime which will expand in the presence of moisture and/or carbon dioxide. Weathering is often an integral part in the processing of steel slag aggregate because it allows the exposed free lime in the aggregate to hydrate thereby reducing (but not entirely removing) the potential for the aggregate to degrade (through the expansion of the residual free lime).

Use in road construction

The physical properties of steel slag aggregate make it a suitable material for road construction where it can be used from the foundation layers to the asphalt surface course. Almost all the steel slag processed by us is used in road construction.

Other uses and dangers

We are aware that steel slag aggregate has been successfully used in a variety of other applications by specialist contractors. For example, it has been used as stone column ground stabilisation and as a raw feed in the cement manufacturing process.

In applications other than road construction, we however cannot advise on the suitability of using steel slag aggregate. It is up to the user to ensure that steel slag aggregate is suitable for the use to which he intends to put it. In doing so it is important for the user to consider the potential interaction between the steel slag aggregate and the other components of the environment in which it is being applied.

Further processing by the user

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We strongly advise against further crushing, grinding or other processing of steel slag aggregate as this may expose “fresh surfaces” resulting in the physical and/or chemical characteristics of the aggregate being affected. Un-hydrated free lime in the aggregate may become exposed requiring the material to be further weathered prior to application.

Warning – rigid structures

Despite any amount of weathering or re-weathering, steel slag aggregate retains the potential to expand. Steel slag aggregate should therefore under no circumstances be used in rigid structures (such as concrete structures) or as a fill material beneath or adjacent to rigid structures. Any expansion within, beneath or adjacent to the rigid structure could result in the structure losing its integrity or being weakened or failing.

Sales of steel slag aggregate

All sales by us of steel slag aggregate are subject to our current standard terms of sale which are available on request or can be accessed from internet site <http://www.harscometals.com/tc.html>

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