

GROUND GRANULATED BLAST FURNACE SLAG POWDER

IT IS PRIMARILY USED AS A SUPPLEMENTARY CEMENTITIOUS MATERIAL

PRODUCT OVERVIEW:

Ground Granulated Blast-Furnace Slag powder is a fine white dust. It is made from Blast-Furnace Slag - a co-product of iron and steel manufacture. Semi molten slag - the almost completely fused and vitrified matter separated during the reduction of metals from their ores - issues from blast furnaces at BHP Newcastle, Australia at a temperature of approximately 1500°C. This colour and physically changes the material to solid granules. These light grey slag granules are subsequently dried and ground to a fine, even lighter, white shade powder in roller mills.

Slag powder consists mainly of calcium and aluminium silicate and has a chemical composition not dissimilar to these respective natural mineral materials and to hydrated Portland cement. It is often mixed with fresh Portland cement powder in the manufacture of concrete, mortars, grouts etc. The mixed cementitious product is referred to as blended cement.

USE AS:

- ✿ As a partial replacement for or preferably an addition to the Portland cement binder component in concrete, concrete masonry, concrete pavers, concrete roofing tiles and other concrete products, mortars, grouts, cementitious (cement-based) paints etc.
- ✿ As a slow setting and hardening very low cost binder when well mixed with smaller quantities of lime (Calcium Hydroxide) and/or other alkalies and water.

- ✿ As a **low cost** extender/filler, non-hiding white pigment in bituminous concrete, baked clay products, coatings, rubber, plastics, adhesives, putties sealants, plastisols etc. This product **must** be fully evaluated and confirmed for suitable use in these or any other industries/products.

USAGE AND APPLICATION:

1. CEMENT REPLACEMENT LEVELS:

By varying the ratio of General Purpose (GP) Portland cement to ground slag, it is possible to optimise specific properties of concrete and mortars in both their plastic unset states as well as their ultimately hardened states.

2. STRENGTH DEVELOPMENT:

Slag/GP Portland cement concrete develops mechanical strength at a **slower** rate (strength gain VS time) after setting up to the 28 day period. Later strengths are higher. Typically 1, 3 and 7 day strengths are lower. Comparable strength can usually be achieved around 28 days and subsequently Slag-GP concrete develops **higher** strength.

The setting time of a particular concrete mix design is usually increased compared with the same concrete strength grade using a particular grade and type of Portland cement alone.

3. CURING

Due to the slower hydration of Slay/GP blends compared with pure GP cement bound concrete, the retention of the original mix water used to mix the concrete (ie. 'curing') **is important** in **all** environmental conditions. It may be a **critical** requirement in highly evaporative conditions such as in hot, dry, low humidity weather or when drying winds pass over the freshly finished concrete in any weather conditions - including conditions applicable in cold, normal humidity weather!

Curing of freshly placed concrete should start **immediately** after the finishing procedures.

The curing should be **continuous** - preferably over a period of 28 days or more so that the design requirements for durability, strength, stripping (de-moulding) time and serviceability will be met.

The most practical efficient method of curing is to spray freshly **set** concrete (about 3-6 hours after placement - depending on concrete temperature and weather conditions) with an application of a good, liquid, moisture evaporating-resistant, film-forming, curing compound* ('membrane' curing compound).

PACKAGING:

It is available ex stock in nominal 40Kg paper sacks - 25 bags per tonne.

STORAGE:

For maximum shelf life, slag should be stored in its original packaging, out of direct sunlight, in appropriate, dry conditions. Keep **dry** and store in temperatures not exceeding 25°C with **low** humidity conditions in its original unopened packaging to extend shelf life.

PRECAUTIONS:

Ground Granulated Blast Furnace Slag is a non-hazardous substance and is classed as non-dangerous goods, however, it is recommended that the following Personal Protective Equipment (PPE) and precautions are followed when handling and using the product:

- ☛ Wear full overalls, gloves safety goggles and a dust mask during mixing
- ☛ Avoid skin and eye contact
- ☛ Always wash hands before eating, drinking, smoking or using the toilet

For further Health and Safety information, please refer to the Ground Granulated Blast Furnace Slag Material Safety Data Sheet (MSDS), which is available from Ability Building Chemical Co.



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