Ground Granulated Blast Furnace Slag

KJ 400

Ground Granulated Blast Furnace Slag (GGBS) is a mineral addition used in concrete with latent hydraulic properties. Ground granulated blast furnace slag is used in the production of massive structures or when sulfate resistance is required of the concrete. The use of ground granulated blast furnace slag is also justified when high final strength is desired from the concrete without requirements being set for early strength. Ground granulated blast furnace slag is also well suited for heat-treated concretes, as the strength loss of concrete containing ground granulated blast furnace slag is smaller than that of conventional concrete. The maximum permitted amounts of ground granulated blast furnace slag depend on the binder used and the exposure class of the concrete structure (see standard). Typically, the amounts of ground granulated blast furnace slag used are 10...70% of the binder amount. In structures requiring sulfate resistance, the proportion of ground granulated blast furnace slag must be at least 70% of the total amount of the binder mixture.

Properties of ground slag	Requirements (EN 15167-1)
Compressive strength (Activity index)	**7 days** ≥ 45% / **28 days** ≥ 70%
Setting time	≤ 2 x reference cement
Fineness	≥ 275 m^2/kg
Magnesium oxide content	≤ 18%
Sulfide content	≤ 2.0%
Sulfate content	≤ 2.5%
Loss on ignition, corrected	≤ 3.0%
Chloride content	≤ 0.10%
Moisture content	≤ 1.0%

Chemical composition of ground slag	Typical composition
CaO	34...41%
SiO_2	32...35%
Al_2O_3	12...15%
MgO	9...13%
TiO_2	1.8...2.6%
S	1.4... 1.6%
Na_2O	0.6...1.1%
K_2O	0.6...0.8%
Fe_2O_3	0.2...2.0%

Physical property	Average
Bulk density	1200 kg/m^3
Particle density	2900 kg/m^3
Fineness	400 m^2/kg

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