

**High Slag Blend is special purpose cement produced by Sunstate Cement Ltd in Brisbane primarily for road base and subgrade soil stabilization. It is also marketed as Roadblend.**

High Slag Blend is manufactured by grinding portland cement clinker with granulated iron blast furnace slag selected for its particular mineral and chemical qualities in ratio 65:35 slag:cement.

It is compatible with most granular and many plastic materials and can replace general purpose cement or hydrated lime in most stabilisation applications. High Slag Blend complies with AS 3972, as Type GB and Type SR cement.

### Cement Properties

The following table provides an example for some typical cement properties for High Slag Blend manufactured by Sunstate Cement Ltd.

Property		GP Cement	AS3972
Setting Time	Initial	3 hrs	≥ 45 mins
	Final	4.3 hrs	≤ 5 hrs
Constancy of Volume (soundness test)		0 mm	
Fineness Index		420 m <sup>2</sup> /kg	
Compressive Strength (Mortar) MPa	3 day	21.0 MPa	
	7 day	34.0 MPa	≥ 20 MPa
	28 day	55.0 MPa	≥ 35 MPa

### Compatibility

High Slag Blend is manufactured for stabilization applications and blending with other cement or cement extenders is not recommended. High Slag Blend is compatible with admixtures complying with AS 1478.

### Pavement Properties

**Pre-Specification.** Where soils are suspected to contain sulfates of natural or industrial origin or where contact is expected with chemical solutions, analytical surveys are highly recommended and the appropriate cement selected and specified.

**Sulfate Resistance.** As with general purpose portland cements, High Slag Blend's resistance to acid solutions including sulfuric acid below pH 6.5 is limited.

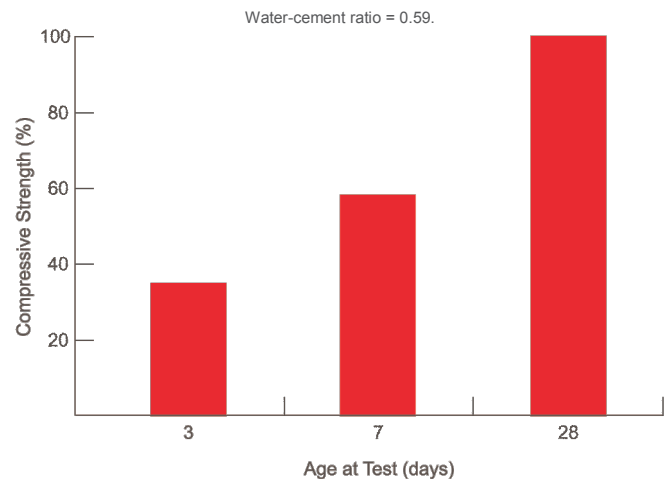
However, the life expectancy of the pavement will be maximised if a higher content of High Slag Blend is used and the pavement is fully compacted. It should be noted that higher cement contents may produce a cement bound material. The moisture content of the pavement should be closely monitored to ensure minimal variation from optimum. To maximise the performance, the stabilized material should be protected from frequent wetting through appropriate construction practices.

### Workability

High Slag Blend will generally exhibit a longer working time window than GP Cement. Under similar conditions, working time to place, compact and trim pavements can extend to 4 hours in comparison to 2 hours for pavements containing GP Cement.

High Slag Blend is therefore suitable for applications such as deep lift stabilisation projects, where it is desirable to extend the length of pavement produced or where longer working times are required.

**Compressive strength development.** Graph One gives indicative data on the performance of High Slag Blend.



**GRAPH ONE. Compressive Strength of High Slag Blend**

**Addition Rate.** High Slag Blend is suitable for use with most granular and many plastic materials and can replace portland or blended cements commonly used in stabilization applications. The addition rate should be determined through a laboratory testing program. Most government authorities specify maximum plasticity index values for base and sub-base materials. The type of materials to be stabilised and the target unconfined compressive strength will determine the addition rate.

High Slag Blend may be used to modify materials with typical addition rates in the range of 2% to 5% by weight of suitable untreated material (depending on the plasticity of the material). For cement bound materials cement contents can be expected to be in the range of 4% to 6% by weight of untreated material.

The following table gives some guidance:

Material	Percentage of Cement	
	Lower Limit	Upper Limit
Reasonably graded crushed rock or gravel	2	4
Reasonably graded sand clayey gravel	3	5
Poorly graded, sandy clayey gravels	4	6

**Mixing.** Common practice is to specify cement contents in 0.5% increments. Most specifications require full compaction to be achieved within 60-90 minutes of the addition of the cement and water to the untreated material. As noted previously, when High Slag Blend is used this time frame may be increased. It is recommended that trials be carried out to determine the maximum time required to compact each treated material. Water should be clean and free from deleterious material. Water containing dissolved salts and organic matter may adversely affect the strength and durability of the pavement.

**Placing.** High Slag Blend may be used in both the in-situ method and the pugmill method. The mixing of the pavement materials should be carried out using purpose built stabilizing equipment.

**Curing.** To ensure full strength development, it is essential that curing of the cement stabilised layer is carried out for a period of at least seven days. Curing methods such as regular, uniform spraying with a water cart and the application of a bituminous prime coat membrane are common.

### Working Instructions

**Storage.** Contact with air and moisture will cause hydration of the cement to occur and will alter the cement properties. The "shelf life" of High Slag Blend cement is therefore dependent on the storage conditions. It is recommended that cement be retested prior to use if its age exceeds three months.

**Handling.** A Material Safety Data Sheet can be downloaded from [www.sunstatecement.com.au](http://www.sunstatecement.com.au) or by contacting Sunstate Cement Ltd. on Tel 07 3895 9890.

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