

## Introduction

Portland cement is the most common type of cement in general usage in many parts of the world, as it is a basic ingredient of concrete, mortar, stucco and most non-specialty grout.



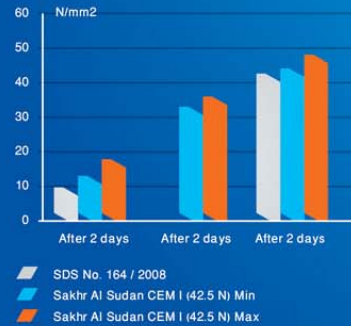
Portland cement range was originally named "Portland" because of the similarity in shape and color of the cement material and limestone of Portland Island, in England.

## Chemical composition

Typical Results		Sakhr Al Sudan	SDS for 164/ 2008 CEM II/A-LL
Silicon Dioxide	SiO <sub>2</sub>	20% - 20.5%	
Aluminum Trioxide	Al <sub>2</sub> O <sub>3</sub>	4.7% - 5.1%	
Ferric Oxide	Fe <sub>2</sub> O <sub>3</sub>	3.1% - 3.6%	
Calcium Oxide	CaO	62.8% - 64%	
Magnesium Oxide	MgO	1.3% - 2.3%	
Sulphate	SO <sub>3</sub>	2.6% - 2.8%	Max. 3.50%
Potassium Oxide	K <sub>2</sub> O	0.4% - 0.7%	
Sodium Oxide	Na <sub>2</sub> O	0.09% - 0.12%	
Chloride	Cl <sub>2</sub>	0.01%	Max. 0.10%
Insoluble Residue	IR	0.25% - 0.30%	Max. 5.00%
Loss On Ignition	LOI	1.6% - 2.4%	Max. 5.00%
Tricalcium Aluminates	C <sub>3</sub> A	6.9% - 7.5%	
Alkalis Equivalent	Eq Na <sub>2</sub> O%	0.4% - 0.55%	



## Growth of compressive strength



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**Sakhr Al Sudan  
 cement**

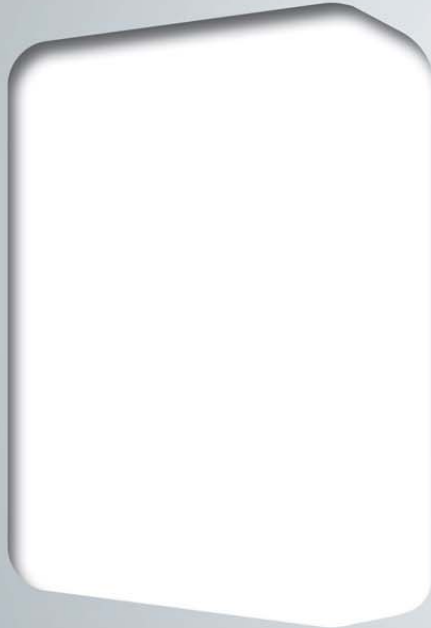
[www.takamolcement.com](http://www.takamolcement.com)

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## Sakhr Al Sudan cement

Sakhr Al Sudan cement: As a Portland cement it is a hydraulic bonding grey fine powder which results from grinding Portland cement clinker (more than 90%) and a limited amount of calcium sulfate which controls the set time.

Sakhr Al Sudan cement clinker: is made by heating, in a kiln, mixture of raw materials including limestone & clay or shale to a temperature of about 1450 °C.



## Main constituents

CEM I clinker %	90	to	95%
Limestone %	0	to	5%
Gypsum %	4	to	6%

## Standard compliance

The production of Sakhr Al Sudan Portland cement Conforms to the requirements of:

- The Sudanese standard specification for ordinary Portland cement CEM I (42.5N): SDS No. 164 /2008
- The European standard specification for Portland cement CEM I (42.5N): EN 197 -1 / 2000

## Uses and applications

Sakhr Al Sudan Cement can be used in all construction purposes related to residential, industrial and institutional buildings and the infra-structural projects as in the following application categories:

- Plain & reinforced concrete.
- Ready mix concrete, prefabricated and pre-cast concrete.
- Structural and non structural concretes (eg. industrial flooring, leveling screeds).
- Infrastructure works ( eg. irrigation, sewage treatment).
- Finishing mortars ( eg. Rendering and tile fixing).

## Safety recommendations

### Hazard Identification

- **Inhalation:** Frequent inhalation of large quantities of cement dust over a long period of time increases the risk of developing lung diseases.
- **Eyes:** Eyes contact with cement, dry or wet, may cause serious and potentially irreversible injuries.
- **Skin:** Cement dust & cement slurry may have an irritating effect on moist skin, due to transpiration or humidity, after prolonged contact. Prolonged skin contact with wet cement or wet concrete may cause also serious burns, that may develop even with no pain or discomfort being felt (for example when kneeling in wet concrete even when wearing trousers). Repeated skin contact with wet cement may cause contact dermatitis.
- **Ingestion:** Only in accidental cases.

### First Aid Measures:

- **After significant accidental inhalation:** move person to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or if coughing or other symptoms subside.
- **After contact with eyes:** do not rub eyes as additional damage is possible by mechanical stress. Remove any contact lenses and open wide the eyelid and wash immediately with abundant clean water for at least 45 minutes to remove all particles. Contact a specialist of occupational medicine or an eye specialist.

- **After skin contact:** for dry cement, first remove dust and then wash with abundant water. For wet cement, wash directly skin with water. Remove dusty clothes and shoes and clean thoroughly before re-using them. Seek medical treatment in all cases of irritation or burns.
- **After significant accidental ingestion:** do not induce vomiting. If person is conscious, wash out mouth with water and give plenty of water to drink. Get immediate medical attention or contact anti poison centre.

## Packing

Sakhr Al Sudan cement is available in the following packaging:

- It is available in 50 Kg bags.
- And also it is available in bulk for ready mixed concrete batch plants and pre-cast concrete factories.

## Storage instruction

- Don't store in wet condition.
- If stored on the open, always cover with tarpaulin/plastic.
- Don't stack bags more than ten high and it is preferable to stack it on wooden pallets.

## Shelf time

Shelf time is known to be 3 months from dispatching date if is stored probably and it is recommended to test the cement after 6 weeks.

## Physical, mechanical prosperities

Typical Results	Sakhr Al Sudan	SDS for 164/ 2008 CEM II/A-LL
Fineness by Blaine -Test Method BS EN 196-6:1992	3000 - 3200	
Initial setting time	180 - 120	60 minutes
Final setting time	240 - 180	6.5 hours
Compressive Strength After 2 days	18 - 13	Minimum 10 N/mm <sup>2</sup>
Compressive Strength After 7 days	36 - 33	
Compressive Strength After 28 days	48 - 44	Minimum 42.5 N/mm <sup>2</sup>
Soundness		Maximum 10 mm