



KWIKBUILD CEMENT

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SANS 50197-1

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• CURING CONCRETE •

Strength development and durability of any concrete mix, regardless of the type of cement used, depends on the degree of hydration of the cement. Strength and durability depend on the production of a dense matrix of low permeability that is resistant to the passage of fluids. It follows that the chemical reaction between cement and water must continue and if concrete is allowed to dry out, this reaction ceases and inhibits strength and potential durability development. Premature loss of water must be prevented for the full benefits of cement hydration on the properties of hardened concrete to be realised.

GUIDE TO CURING IN-SITU CONCRETE

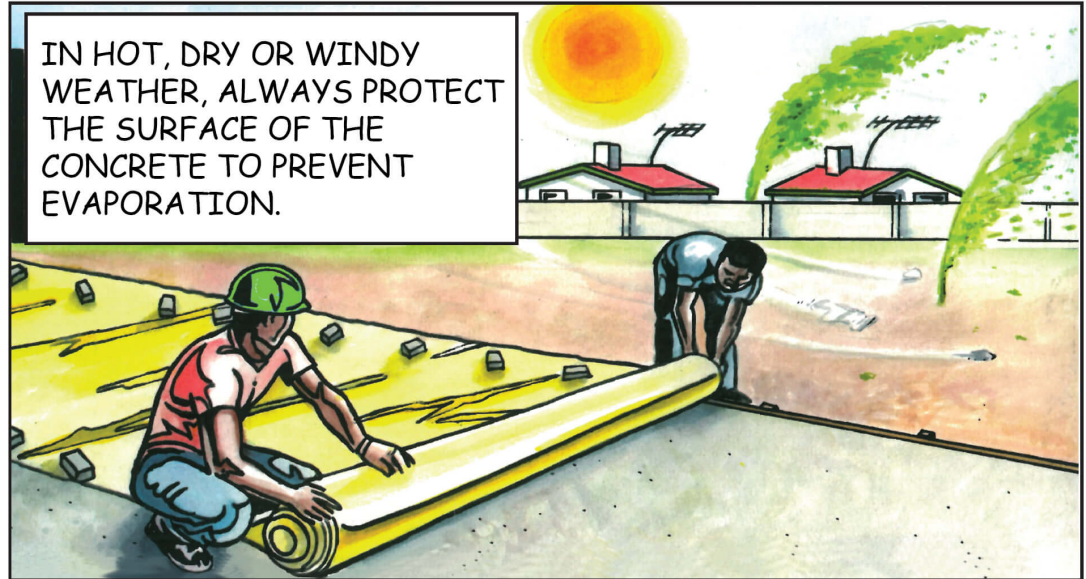
Type of construction	Curing method	Application
1. Pavements and slabs, etc.	Polythene sheeting.	Apply in close contact with surface immediately after finishing, taking care to prevent damage.
	Pigmented resin based compound with high efficiency rating.	Immediately after finishing the process is complete.
2. Columns, beams and walls etc.	Polythene sheeting.	Apply in close contact with surface immediately after formwork is finished.
	Resin based curing compound.	Immediately after formwork is removed.
	Formwork itself.	Leave undisturbed for at least 4 days, preferably 7 days.
3. Tops of columns, beams and walls etc.	Polythene sheeting.	Immediately after the finishing process is complete.
	Layer of damp sand	Immediately after the finishing process is complete.

MINIMUM MOIST CURING PERIOD (days)

Cement type	Weather	
	Normal 15°C . 25°C 65% Relative Humidity low wind speed	Hot with dry winds or cold (below 5°C)
CEM I		
CEM IIA	5 days	8 days
CEM IIB CEM III CEM IV CEM V	7 days	10 days

THE DRYING RATE DECREASES RAPIDLY AFTER THE FIRST 24 HOURS AND REACHES AN ALMOST INSIGNIFICANT VALUE WITHIN THREE OR FOUR DAYS. THE FIRST 24 HOURS ARE THEREFORE THE MOST CRITICAL. PROTECTION OF THE CONCRETE ACTUALLY STARTS FROM DISCHARGE, THE REASON BEING THAT SOME 20% OF CONCRETE (BY VOLUME) IS WATER AND IS SUBJECT TO EVAPORATION.

IN HOT, DRY OR WINDY WEATHER, ALWAYS PROTECT THE SURFACE OF THE CONCRETE TO PREVENT EVAPORATION.



In the case of slabs which are to be trowelled, protection from drying may be required after casting but before finishing begins.

Most curing compounds are not recommended for surfaces that are to receive finishes such as a screed, plaster or paint because of the likelihood of reduced bond.

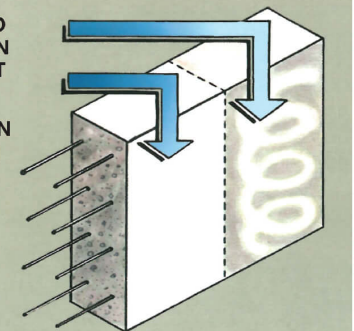
Curing by ponding or continuous spraying is seldom used because of the practical problems associated with supply, containment and the ultimate disposal of water used for curing. Care must be taken to avoid sudden temperature changes caused by the use of cold curing water in warm concrete. Cycles of wetting and drying should be avoided. Both of the above may lead to micro-cracking of the surface. Water curing is only suitable when the temperature is well above freezing. Materials such as wet hessian or wet sand are sometimes used but they must be kept continuously wet and not be allowed to dry out. Damp materials may stain concrete.

Black polythene sheeting should be avoided in hot weather but has its advantages in cold weather.

APPLICATION FOR CURING COMPOUNDS

HAPHAZARD APPLICATION OF CURING COMPOUNDS REDUCE EFFECTIVENESS:

HAPHAZARD APPLICATION (INCORRECT)
 UNIFORM APPLICATION (CORRECT)



Further information refer:

SANS 2001 - CCI.
 British Concrete Society Digest No.3 - Curing Concrete.
 Concrete Society of Southern Africa - Concrete Curing Description Method and Control.
 Concrete Testing Services.

FAST STRONG DURABLE