

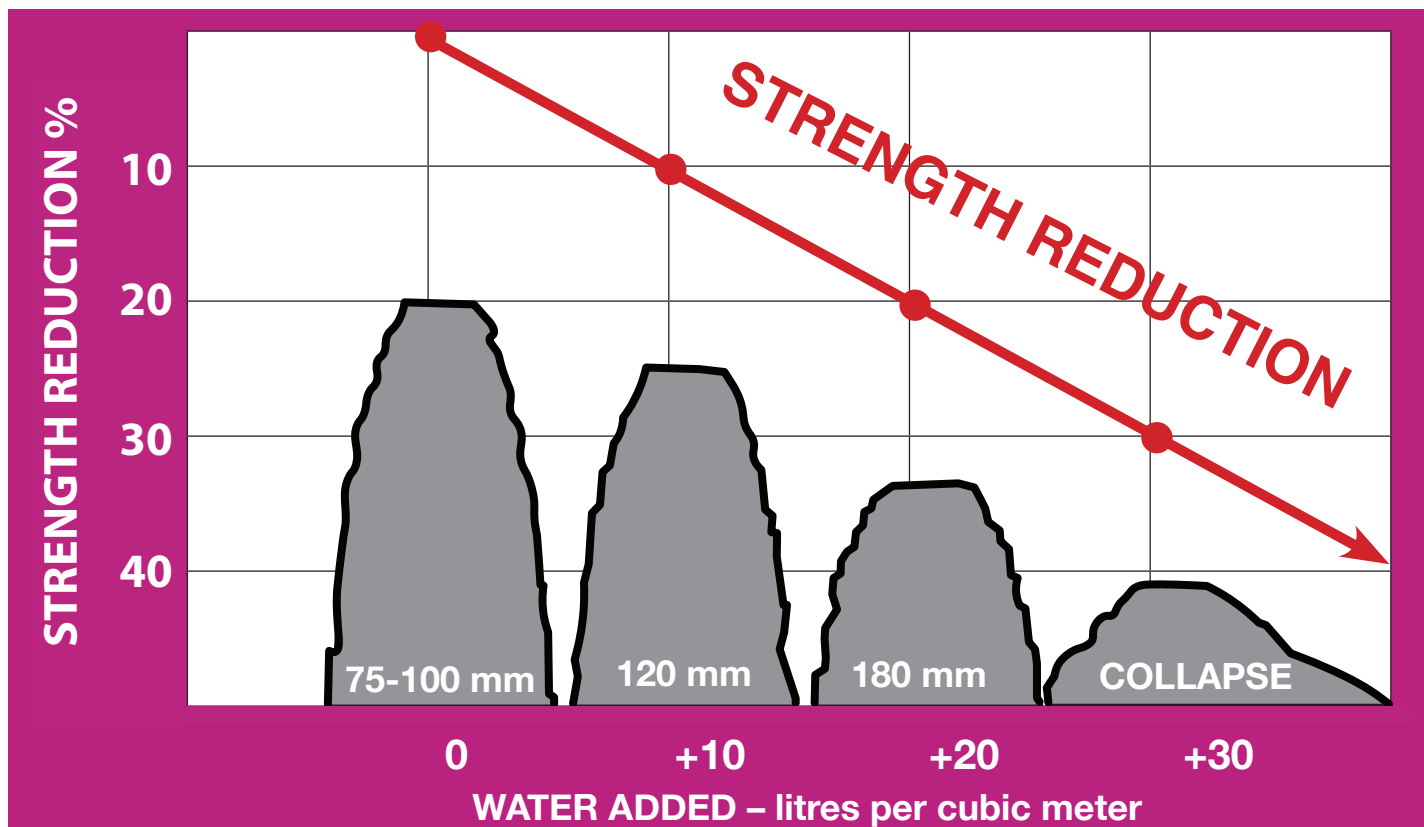


Quantum Readymix Concrete

THE EFFECT OF THE ADDITION OF WATER ON CONCRETE STRENGTH AND SLUMP (Based on 25MPa concrete at 90 mm slump)

Particularly in summer at temperature above 25 degrees, it is almost impossible to pour concrete that has been on site for longer than 60 minutes without adding water without honeycombing. The contractor has to then make a choice as the RMC company can no longer be held liable for the concrete's quality. He must either add water and adulterate the strength, pour, vibrate and compact drier concrete whose workability is fast diminishing or dump the concrete at great cost to himself.

In short always ensure that the site, its staffing and equipment is prepared for the concrete they have ordered.



NOTES ON THE EFFECT OF THE ADDITION OF EXCESS WATER ON CONCRETE STRENGTH AND SLUMP

The standard concrete as supplied by Quantum Readymix Concrete is designed to have a consistency of 90mm (± 25 mm) as measured by the slump test. Pump mixes are designed to have a workability of 100mm-125mm. Provided the concrete is within these workability parameters it will meet the design strength requirements.

If a higher than the design slump is required, water added must be authorised by the responsible person on site and recorded on the delivery note.

NEVER UNDER ESTIMATE THE EFFECT OF VIBRATION

Unvibrated concrete containing as little as 5% air will reduce concrete strength by some 30%.

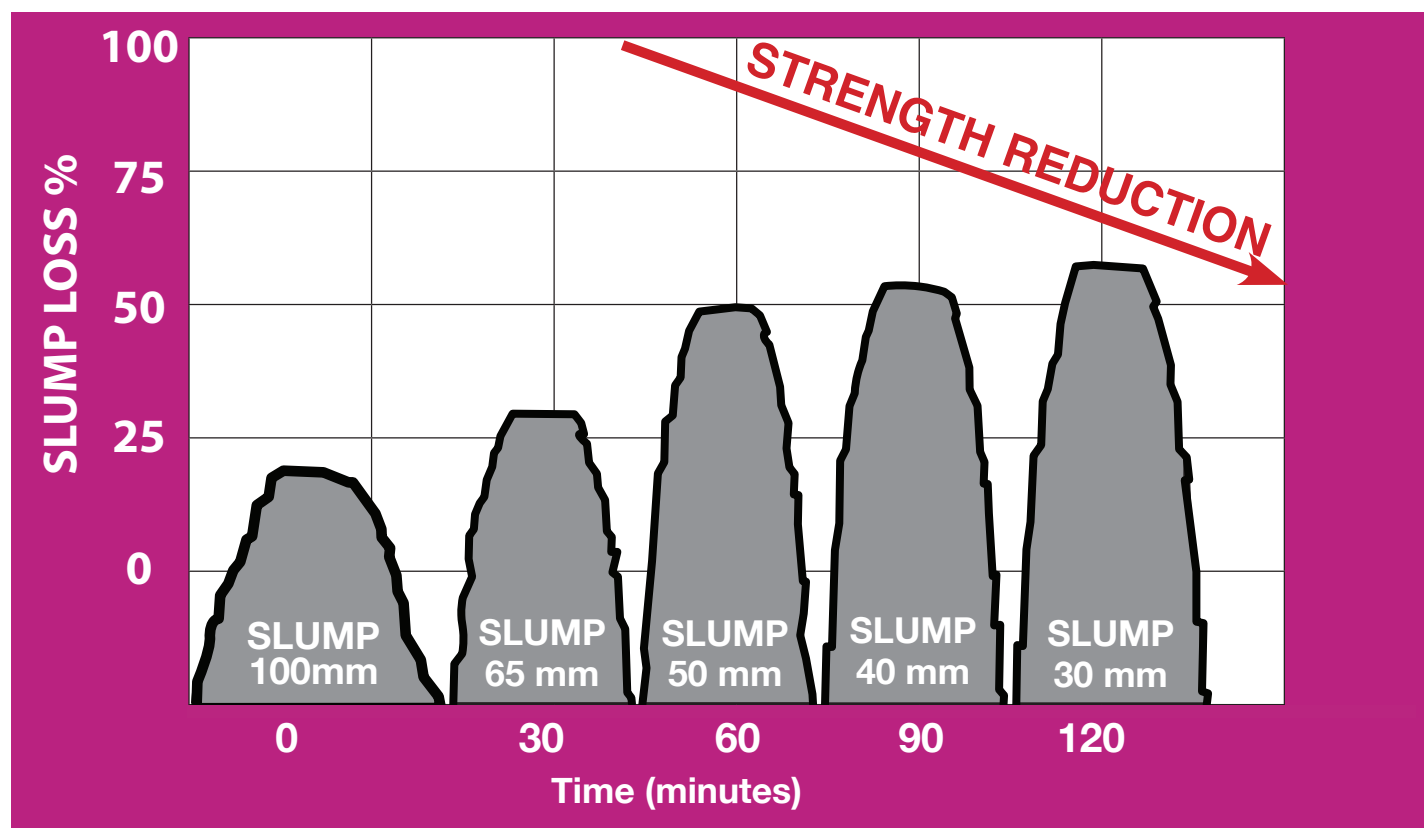


Quantum Readymix Concrete

THE EFFECT OF TIME ON SLUMP LOSS (Highveld autumn conditions)

The below graphs were derived from tests conducted on concrete in the 20Mpa to 30 Mpa range. When pouring high strength concrete ie 40Mpa or higher the heat build up in the all but totally sealed mixer drum as well as evaporation and hydration will exacerbate the situation. This will be even more pronounced in summer **SPECIAL PRECAUTIONS NEED TO BE TAKEN**.

The quoted workability applies to the concrete "on arrival on site". Concrete loses moisture and workability the longer it stands and it is for this reason that the site must be ready for the concrete. The extra addition of water to compensate for workability loss due to delays will adversely affect the strength, especially in summer. It is for this reason that standing times are not allowed to exceed half an hour.



NOTES ON THE EFFECT OF SLUMP LOSS DUE TO TRUCKS STANDING EXCESSIVELY LONG ON SITE

TIME STANDING ON SITE (MINUTES)	SLUMP LOSS %	REQ WATER TO MAINTAIN SLUMP AT 75-100MM	% STRENGTH LOSS
30	35	8 litre / m ³	5%
60	50	10 litre / m ³	10%
90	60	12 litre / m ³	15%
120	70	17 litre / m ³	20%

The above estimates can be considered as conservative. Adverse weather conditions, more so in summer, as well as fine aggregate type could affect slump losses greater than that which is depicted.