RUSSTECHNICAL NOTES

FAST SETTING CONCRETE

DISCUSSION:

Cold weather significantly affects concrete setting time and early strength-gain characteristics. This bulletin has been developed by **RUSSTECH ADMIXTURES** to explain an accelerator system of admixtures that can be used for very fast setting concrete in cold weather where chloride-bearing admixtures will not present a problem. This system utilizes **FAST SET 100 HE**, water reducing, accelerating admixture and **29% CALCIUM CHLORIDE** in the same mix design. *This system will not prevent concrete from freezing or eliminate the need for protection of the concrete during cold weather placements.* **RUSSTECH ADMIXTURES** recommends temperature control of the mix and proper cold weather concreting practices as discussed in ACI 306R-88 when incorporating this accelerating admixture system.

CONCRETE SETTING TIME:

In the table shown below, the setting time of the concrete increases by approximately one-third for each 10 F decrease in temperature.

Setting Time at Various Temperatures	
Temperatures	**Approximate Setting Times**
70 F	**6 Hours**
60 F	**8 Hours**
50 F	**11 Hours**
40 F	**14 Hours**
30 F	**19 Hours**
20 F	**No set (concrete will freeze)**
Source: "Concrete Construction", 1990	

Through concrete temperature control, accelerating admixtures and ambient temperature control it is possible to speed up the rate of hydration and strength-gain to achieve successful cold weather concreting.

ACCELERATOR SYSTEMS:

FAST SET 100 HE & 29% $CACL_2$ Doses		
% Set	**Dosage**	**Accelerators**
1%	**16 ozs/cwt**	**FAST SET 100 HE**
2%	**16 ozs/cwt**	**FAST SET 100 HE**
	32 ozs/cwt	**29% $CACL_2$**
3%	**32 ozs/cwt**	**FAST SET 100 HE**
	32 ozs/cwt	**29% $CACL_2$**
4%	**32 ozs/cwt**	**FAST SET 100 HE**
	64 ozs/cwt	**29% $CACL_2$**
Source: RussTech Admixtures		

Listed in the table below are typical acceleration performance characteristics for the **FAST SET 100 HE & 29% $CACL_2$** accelerating admixture system.

Approximate Acceleration Performance At 50 F (Ambient & Concrete)	
% Set	**Acceleration (hrs:mins)**
1%	**2:55**
2%	**4:05**
3%	**5:00**
4%	**6:10**
Source: RussTech Admixtures	

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