

MasterSet[®] FP 20

Accelerating Admixture

Description

MasterSet FP 20 admixture is a multi-component, non-chloride, water-reducing and accelerating admixture formulated to accelerate concrete setting time and increase early and ultimate strengths across a wide range of ambient temperatures (hot, mild, cold and subfreezing). MasterSet FP 20 admixture meets ASTM C 494/C 494M requirements for Type C, accelerating, and Type E, water-reducing and accelerating, admixtures.

Applications

Recommended for use in:

- Concrete being placed in subfreezing ambient conditions
- Reinforced, precast, pumped, flowable, lightweight or normal weight concrete and shotcrete (wet mix)
- Concrete placed on galvanized steel floor and roof systems
- Prestressed concrete
- Fast-track concrete construction
- Concrete subject to chloride ion limitations
- Self-consolidating concrete
- Pervious concrete
- 4x4[™] Concrete

Features

- Accelerated setting time
- Especially effective for concrete placement at ambient temperatures as low as 20 °F (-7 °C)
- Superior workability
- Increased early and ultimate strengths
- Superior finishing characteristics for flatwork and cast surfaces

Benefits

- Earlier finishing of slabs – reduced labor costs
- Reduced in-place concrete costs
- Reduced or eliminated heating and protection time in cold weather
- Earlier stripping and reuse of forms

Performance Characteristics

Mixture Data

Type II cement, lb/yd ³ (kg/m ³)	600 (356)
Slump, in. (mm)	4 ± 1 (100 ± 25)
Air Content, %	Non-air-entrained concrete
Concrete Temperature	55 °F (12 °C)

Mild Weather

Setting Time: Ambient Temperature: 70 °F (21 °C)

Time of Set

Mixture	Initial Set (h:min)	Difference (h:min)
Plain	4:30	REF
MasterSet FP 20 admixture @ > 10 fl oz/cwt (650 mL/100 kg)	3:18	-1:12



Cold Weather**Setting Time: Ambient Temperature: 50 °F (10 °C)****Time of Set**

Mixture	Initial Set (h:min)	Difference (h:min)
Plain	5:48	REF
MasterSet FP 20 admixture @		
> 20 fl oz/cwt (1,300 mL/100 kg)	4:00	-1:48

Subfreezing Weather**Setting Time: Ambient Temperature: 30 °F (-1 °C)****Time of Set**

Mixture	Initial Set (h:min)	Difference (h:min)
Plain	12:12	REF
MasterSet FP 20 admixture @		
> 60 fl oz/cwt (3,910 mL/100 kg)	3:54	- 8:18
> 90 fl oz/cwt (5,870 mL/100 kg)	2:24	- 9:48

Guidelines for Use

Dosage: The specific dosage of MasterSet FP 20 admixture for a given application is dependent on ambient and concrete temperatures, cement chemistry, concrete mixture proportions, the amount of set time acceleration needed and strength performance required. Listed below are the recommended dosage ranges for various weather applications.

Recommended Dosage for Mild and Cold Weather

Applications: Use 5 - 60 fl oz/cwt (325 - 3,910 mL/100 kg) of cementitious material. As the dosage rate of MasterSet FP 20 admixture is increased, setting time is accelerated and early and ultimate strengths are increased.

Recommended Dosage for Subfreezing Weather

Applications: Use 60 - 90 fl oz/cwt (3,910 - 5,870 mL /100 kg) of cementitious material to reduce the freezable water content of the mixture, to accelerate setting time and to provide early protection against freezing while the concrete is plastic in subfreezing temperatures.

Conservation of the heat generated by the concrete through the use of wind protection and/or insulation will permit placement in subfreezing ambient temperatures. See ACI 306.1, "Standard Specification for Cold Weather Concreting," and ACI 306 R, "Guide to Cold Weather Concreting" for recommended protection in cold weather.

Exposure to air movement, concrete surface to volume ratio, and mixture proportions affect performance under extreme cold weather conditions. Concrete containing MasterSet FP 20 admixture may reduce or eliminate the need for recognized protective measures and protection time required in cold or subfreezing weather concreting applications. Field evaluations of the concrete mixture selected for the project should be performed using local materials to determine: the optimum dosage rate of MasterSet FP 20 admixture required to achieve the desired setting time and strength performance, the minimum acceptable ambient and concrete temperatures for placement, and if the recognized protective measures and protection time required for cold and subfreezing weather concreting may be reduced or eliminated.

MasterKure ER 50 evaporation reducer is recommended to minimize evaporation of surface moisture. Concrete flatwork containing MasterSet FP 20 admixture that will be exposed to subfreezing weather conditions must be sealed to prevent the ingress of additional water to hardened concrete during curing. A surface sealer must be applied as soon as the concrete reaches initial set or finishing is complete.

Product Notes

Corrosivity – Non-Chloride, Non-Corrosive: MasterSet FP 20 admixture will neither initiate nor promote corrosion of reinforcing steel in concrete.

Compatibility: MasterSet FP 20 admixture can be used as a singular admixture or as a component in a Master Builders Solutions admixture system. When used with other admixtures, each admixture must be dispensed separately into the mixture.

In applications that require MasterSet FP 20 admixture dosages of 30 fl oz/cwt (1,950 mL/100 kg) or more, the use of a MasterGlenium® high-range water-reducing admixture is recommended to obtain increased water reduction and strength performance. **At such dosages, erratic slump behavior may be experienced when MasterSet FP 20 admixture is used in concrete mixtures that also contain naphthalene-based admixtures.**

Storage and Handling

Storage Temperature: MasterSet FP 20 admixture should be stored above freezing temperatures. If MasterSet FP 20 admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. **Do not use pressurized air for agitation.**

Shelf Life: MasterSet FP 20 admixture has a minimum shelf life of 12 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your local sales representative regarding suitability for use and dosage recommendations if the shelf life of MasterSet FP 20 admixture has been exceeded.

Packaging

MasterSet FP 20 admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Safety Data Sheets: MasterSet FP 20 admixture

Additional Information

For additional information on MasterSet FP 20 admixture or its use in developing a concrete mixture with special performance characteristics, contact your local sales representative.

Master Builders Solutions creates technologies for the construction industry inspiring people to build better. We are active in ~40 countries and operate 35 production sites with over 1,600 employees. We develop, produce, and market high-quality chemical admixtures, as well as adjacent core technologies, to master the challenges of today and support a decarbonized future. Our people are pivotal and pair leading technologies and a strong brand heritage to surpass our customers' expectations and drive continuous value creation.

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