



## ASH GROVE CEMENT COMPANY

### DURAPOZ® F

Durapoz® F is a performance enhanced pozzolan made from Class F fly ash for *High Performance Concrete*. The product is designed to mitigate alkali silica reactivity and provide exceptional sulfate resistance and reduced chloride permeability while attaining improved ultimate flexural and compressive strengths.

### INTER-GRINDING

Inter-grinding is the key to the performance of Durapoz® F. The largest coarse particles of the fly ash are fractured to a smaller size, increasing the surface area of these large particles. This increases the early reactivity of Durapoz® F, improving early strength gain and set time.

### OPTIMIZED SULFATE CONTENT

Sulfates (SO<sub>3</sub>) in cement controls setting time, workability, and how the cement interacts with admixtures. Fly ash and other mineral admixtures contain alumina and other minerals that have an affinity for sulfates. If the sulfates are not optimized in a concrete mixture, there can be problems with false set, slump loss and admixture incompatibility. The sulfate content of Durapoz F® is optimized to meet the needs of the cement and the inter-ground Class F fly ash.

### SPECIFICATIONS

ASTM C 618 Class F Fly Ash  
AASHTO M 295 Class F Fly Ash

### STATE APPROVED

Durapoz® F is approved for use in state concrete in Kansas, Missouri, and the KCMMB.

### COMPRESSIVE STRENGTH

The one through 28 day strengths are comparable to Type I. However, Durapoz® F provides increased strength at ages later than 28 days. The water-to-cement ratio law applies to Durapoz® F the same as to all portland cements.

### SETTING TIME

The time of set of Durapoz® F concrete is approximately 20 - 30 minutes longer for initial set than portland cement only concrete. Particularly in hot weather conditions, this is an advantage--allowing a little more time for placing and finishing.

### AIR ENTRAINMENT

Due to the Class F fly ash, the increased paste volume, and particle fineness, Durapoz® F typically requires an increased quantity of AEA to attain the same air content in the

concrete. However, the increased AEA quantity can provide improved air void spacing factors and increased specific surface area. As with all concrete, proper air content and air void parameters must be maintained for freeze and thaw durability.

### WORKABILITY

Because of the increased paste volume and particle fineness of Durapoz® F, the workability of concrete is greatly enhanced at the same slump.

### SULFATE RESISTANCE

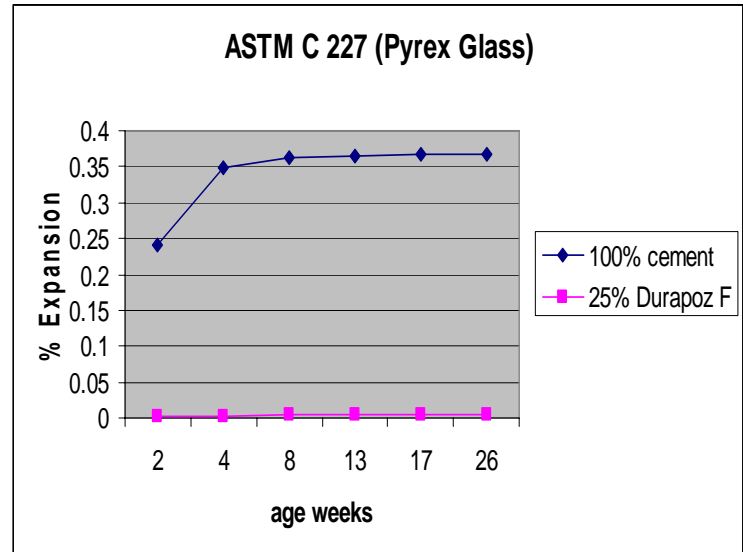
Durapoz® F can be used to produce high sulfate resistant concrete, which meets the ASTM C618 specification for high sulfate resistance. Blending Type II cement and Durapoz® F can be used as an alternative for Type V portland cement.





## TYPICAL DATA

<u>Parameter</u>	<u>ASTM Specs.</u>	<u>Typical</u>
<b>Chemical Properties</b>		
SiO <sub>2</sub> + Al <sub>2</sub> O <sub>3</sub> + Fe <sub>2</sub> O <sub>3</sub> %	70 min.	77-85
Sulfur as SO <sub>3</sub> , %	5.0 max.	3.0-3.5
Loss on Ignition, %	6.0 max.	1.0-2.0
<b>Physical Properties</b>		
Specific gravity	----	2.50-2.60
<b>Fineness:</b>		
325 sieve, % retained	34 max	0.2-3.0
<b>Autoclave</b>		
Expansion, %	0.80 max.	0.00-0.01
<b>Strength, Activity Index</b>		
<b>% of Control</b>		
7 Days	75 min.	95-105
28 Days	75 min.	100-115
<b>Water Demand</b>		
% of Control max	105 max	90-100
<b>Mortar Expansion (ASR Mitigation), ASTM C 411:</b>		
14 Days, % of control	100 max.	28.4
<b>Sulfate Resistance: ASTM C 1012</b>		
<b>High Sulfate Exposure</b>		
6 months, %	0.05 max.	0.03
<b>Drying Shrinkage Increase</b>		
<b>Difference in % over control @ 28 days</b>		
	0.03% max	0.00



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For Further Information:

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