PLAINTIFF'S
EXHIBIT
CHV-481

A. P. GREEN REFRACTORIES CO.
MEXICO, MISSOURI 65265 U.S.A.
Subsidiary of United States Gypsum Company

PRELIMINARY TECHNICAL DATA

MIZZOU CASTABLE Plus

60% Alumina Castable
Manufactured at Mexico, Missouri; Oak Hill, Ohio;
Philadelphia, Pennsylvania; and Sulphur Springs, Texas

MAXIMUM RECOMMENDED TEMPERATURE	3000°F	1650°C
QUANTITY REQUIRED - Net	132 lb/ft^3	2.12 g/cc
QUANTITY IN PLACE	lb/ft^3	g/cc
Cured and Then Dried at 220°F (105°C)	138	2.21
Heated at 1500°F (815°C) and Then Cooled	132	2.12
WATER REQUIRED FOR MIXING	Approximately	
Per 100 Pounds (45.4 kg)	1 gal (US)	3.8 liters
MAXIMUM TIME FROM ADDING WATER TO PLACING MATERIAL		
Minutes	20	
PERMANENT LINEAR CHANGE - ASTM C113		
Expansion or Shrinkage		
Cured and Then Dried at 220°F (105°C)	Nil	
Heated at 1500°F (815°C) and Then Cooled	0.1% Shr	
Heated at 2000°F (1095°C) and Then Cooled	0.2% Shr	
Heated at 2500°F (1370°C) and Then Cooled	1.0% Exp	
Heated at 2900°F (1595°C) and Then Cooled	2.0% Exp	
MODULUS OF RUPTURE - ASTM C133	lb/in^2	kg/cm^2
Cured and Then Dried at 200°F (105°C)	750	53
Heated at 1500°F (815°C) and Then Cooled	340	24
Heated at 2000°F (1095°C) and Then Cooled	370	26
Heated at 2500°F (1370°C) and Then Cooled	600	42
COLD CRUSHING STRENGTH - ASTM C133		
Cured and Then Dried at 200°F (105°C)	2800	195
Heated at 1500°F (815°C) and Then Cooled	1500	105
Heated at 2000°F (1095°C) and Then Cooled	1500	105
Heated at 2500°F (1370°C) and Then Cooled	2100	150
PARTICLE SIZE - ASTM C92		
Retained on 4 Mesh Tyler Screen (4.70 mm opening)		
Wet Analysis	Less Than 5%	

(Continued)

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"HEAT-UP" SCHEDULE TO 2500° F.

MIZZOU CASTABLE VERSUS MIZZOU CASTABLE PLUS

- CONDITIONS -

1. BOTH TAKE 24-HOUR MINIMUM HYDRAULIC CURE
2. START AT AMBIENT AIR TEMPERATURE OF 50° F. FOR HEAT-UP
3. 9" LINING

MIZZOU CASTABLE

AT SCHEDULE B (75° F./HR.)

50° F. TO 250° F.	-	2.7 HOURS
HOLD AT 250° F.	-	4.5 HOURS
250° F. TO 500° F.	-	3.3 HOURS
HOLD AT 500° F.	-	4.5 HOURS
500° F. TO 1000° F.	-	6.7 HOURS
HOLD AT 1000° F.	-	4.5 HOURS
1000° F. TO 2500° F.	-	20.0 HOURS
HOLD AT 2500° F.	-	1.0 HOUR
TOTAL		47.2 HOURS

MIZZOU CASTABLE PLUS

AT 300° F./HR.

FROM 50° F. TO 2500° F.	-	8.2 HOURS
HOLD AT 2500° F.		1.0 HOUR
TOTAL		9.2 HOURS

NOTE: IF LOST PRODUCTION WAS WORTH $1,000/HOUR FOR THIS EXAMPLE, SAVINGS WOULD AMOUNT TO $38,000. ALSO, FUEL AND "HEAT-UP" MONITORING COSTS WOULD BE SUBSTANTIALLY REDUCED.

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MIZZOU CASTABLE Plus

THERMAL CONDUCTIVITY At a Mean Temperature of	Btu-in ft²hr°F	kcal-m m²hr°C
400°F (205°C)	4.46	0.55
800°F (425°C)	4.67	0.58
1200°F (650°C)	4.88	0.61
1600°F (870°C)	5.10	0.63
2000°F (1095°C)	5.32	0.66
2400°F (1315°C)	5.54	0.69

CHEMICAL ANALYSIS
Calcined Basis

Silica - SiO_2	31.5 - 34.5%
Alumina - Al_2O_3	58.5 - 61.5%
Iron Oxide - Fe_2O_3	1.0 - 2.0%
Lime - CaO	2.5 - 3.5%
Magnesia - MgO	0.1 - 0.6%
Titania - TiO_2	1.0 - 2.0%
Alkalies - $Na_2O + K_2O$	0.3 - 0.8%

These results cannot be taken as maximum or minimum requirements for specification purposes.

May 2, 1983