

REFRACTORY & INSULATION CORPORATION

DEVELOPMENT PRODUCTS

<u>PRODUCT</u>	<u>PRODUCT NUMBER</u>
Lt. Wt. Moldit 50 (A-1434) Repl. by 2065	2000
Lt. Wt. Moldit 50 LINS (A-1446) Repl. by 2058	2001
Zircon Ramming Mix (A-1425)	2002
Hi Alumina Ramming Mix (A-1444-1)	2003
Zircon Mortar (A-1417)	2004
T. C. Cement (A-1500)	2005
Spray-Frac A-C (A-2006)	2006
Spray-Frac C (Modification)	2007
Spray-Frac Z	2008
Moldit #17 (A-1416)	2009
Light Weight Moldit #50	2010
SDK-50	2011
D-CO Castable	2012
Dry Surebond A-1452	2013
Light Weight Moldit #50 L. I.	2014
Special Type C Refractory (TVA)	2015
Dry Super 3000	2016
Hi-Aluminacrete-C	2017
H S Gun Mix	2018
Lt. Wt. Castable A-1389-2 (Wabash Smelting only)	2019
A-1388 for Hellenic (Dravo)	2020
Aluminacrete 65	2021
Stave Grout A-1457	2022
SDK-50 (T)	2023
Graphite Ram Mix (A-1406)	2024
Lt. Wt. Moldit #50	2025
Mor-Mix 2026	2026

CE0105476

**PLAINTIFF'S
EXHIBIT**

70161.00

CE/HI (F) 33819

**PLAINTIFF'S
EXHIBIT**

NV-012635

DEVELOPMENT PRODUCTS

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<u>PRODUCTS</u>	<u>PRODUCT-NUMBER</u>
Blast Furnace Castable	2050
Spray-Frac A (See 853)	2051
Blast Furnace Castable (Cancelled)	2052
Moldit #15	2053
Hi Alumina Wash	2054
Hi Alumina Mortar	2055
Magnesite-Dolomite Gunning Mix	2056
Spray-Frac M-2 (Modification)	2057
LINS 50 (Modification)	2058
Super 3000 Winterized(Research)	2059
Baker Jebcpatch	2060
Lt. Wt. 50 (Modification) Repl. by 2065	2061
#3000 Cement (Modification)	2062
	2063
	2064
Light Weight Moldit #50	2065
Spray-Frac M-2 J	2066
	2067
	2068
	2069
	2070
	2071

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

1 Lt. Wt. Moldit #50 PRODUCT NO. 2000 DATE 9-30-65

LAB NO. A-1434 WATER FOR MIXING

REMARKS: Adjust cast density to 50 + 3 lbs. per cubic foot

MIX: % BY WEIGHT MIXING TIME

44.6% PA-6 Perlite
 14.3% Afton Clay
 3.6% PA-130 Perlite
 37.5% Tito Cement

ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRE
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	Cast BULK DENSITY 50 + 3 lbs.
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
AL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH
SPALLING LOSS		CE0105478	CE/HI (F) 33821

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

LT. WT. MOLDIT #50 LINS PRODUCT NO. 2001 DATE 9-30-65

LAS NO. 2001 WATER FOR MIXING

REMARKS: Replaced by Product 2058

MIX: % BY WEIGHT MIXING TIME

37.0% PA-6 Perlite
16.1% PA-130 Perlite
7.6% Jenner Clay
39.3% CA-25 (Alcoa) Binder

ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRE
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	CAST BULK DENSITY 50+ 3 lbs.
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
IAL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH

SPALLING LOSS

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

Plastimold PRODUCT NO. 2007 DATE 7-12-65

NO. WATER FOR MIXING

REMARKS:

MIX: % BY WEIGHT MIXING TIME

9.1% Insulating Grog
 9.1% PA-6 Perlite
 4.5% Jenner Clay
 27.3% Tito
 40.9% Brick Grog, 8x 40 Mesh
 9.1% M&D Clay

PHYSICAL ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRE
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	CAST BULK DENSITY 75 ± 5 lbs.
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
THERMAL CONDUCTANCE			COLOR
		CE0105480	COMPRESSIVE STRENGTH
SPALLING LOSS			

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

AND Spray Frac Z PRODUCT NO. 2008 DATE September 15
 LAB NO. A-1438 WATER FOR MIXING _____
 REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME 4 Minutes
 90% Zircon Sand Lab Mix
 5% Bentonite
 Field Mix Add
 6.8% Sodium Silicate
 35.0% Water
 Base - 937 Grams
 "D" Soda - 63 Grams
 Water - 215 Grams

8 bags to 1 cube.

PHYSICAL ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
%	MESH		IGN. LOSS	CURED
ON 3	MESH		SiO ₂	DRIED @ 220°F
ON 4	MESH		Fe ₂ O ₃	FIRE
ON 6	MESH		Al ₂ O ₃	ACE
ON 8	MESH		Cr ₂ O ₃	BULK DENSITY
ON 20	MESH		TiO ₂	FLASH SET
ON 40	MESH		ZrO ₂	CONSISTENCY
ON 60	MESH	GR	MgO	STICKINESS
ON 100	MESH	29.0 ± 3.0%	Na ₂ O	WORKABILITY
ON 200	MESH		MnO	MOISTURE LOSS
THRU 100	MESH	71.0 ± 4.0%	CaO	LINEAR CHANGE
				PENETRATION
• THERMAL CONDUCTANCE				COLOR
Pot Life	30 Minutes Min.			COMPRESSIVE STRENGTH
SPALLING LOSS				

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

Moldit #17
 LAB NO. A-1416
 REMARKS:

PRODUCT NO. 2009 DATE 9-30-65

WATER FOR MIXING Tamping 9.0% Cast 12.6%

MIX: % BY WEIGHT MIXING TIME 3 minutes

67.0% Calcined Missouri Flint Clay - 6 Mesh

33.0% Alcoa Binder

PHYSICAL ANALYSIS			CHEMICAL ANALYSIS		MODULUS OF RUPTURE
ON 1/4	MESH		IGN. LOSS	6.35	CURED
ON 3	MESH		SiO ₂	28.86	DRIED @ 220°F 1200 psi min.
ON 4	MESH		Fe ₂ O ₃	0.72	FIRE
ON 6	MESH	TR	Al ₂ O ₃	56.06	PCE
ON 8	MESH	13.0 ± 3.0%	Cr ₂ O ₃		BULK DENSITY 124 lbs./ft ³
ON 20	MESH	35.0 ± 4.0%	TiO ₂	1.17	FLASH SET
ON 40	MESH	10.0 ± 3.0%	ZrO ₂		CONSISTENCY
ON 60	MESH	4.0 ± 1.0%	MgO	2.17	STICKINESS
ON 100	MESH	3.0 ± 1.0%	Na ₂ O	0.29	WORKABILITY
ON 200	MESH		MnO		MOISTURE LOSS
Thru 100	MESH	35.0 ± 5.0%	CaO	3.03	LINEAR CHANGE @ 2500 1.1%
			K ₂ O	0.85	PENETRATION
			SO ₃	0.03	COLOR
					COMPRESSIVE STRENGTH 220°F-5480 psi
SPALLING LOSS		CE0105482			Maximum Service 2550°F

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

BRAND SDK-50 PRODUCT NO. 2011 DATE 11-15-57
 LAB NO. 2011 WATER FOR MIXING _____
 REMARKS: Replaces A-1377, Product 411 - Revised 1-26-66, Revised 10-10-57
(May use PA-420 in place of PA-320)
 MIX: % BY WEIGHT _____ MIXING TIME 4 minutes

	<u>Batch Weight</u> (lbs.)
40.0 Incor Cement (Hi Early)	400
30.0 #60 Sand	300
17.0 PA-320 Perlite	170
13.0 KY#6 Clay	130

GREEN ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH		IGN. LOSS	CURED
ON 3	MESH		SiO ₂	DRIED @ 220°F 500 Psi. Min.
ON 4	MESH		Fe ₂ O ₃	FIRED
ON 6	MESH		Al ₂ O ₃	PCE
ON 8	MESH	1.0 ± 1.0%	Cr ₂ O ₃	CAST BULK DENSITY 49 ± 3 lbs./ft.3
ON 20	MESH	10.0 ± 3.0%	TiO ₂	FLASH SET
ON 40	MESH	10.0 ± 2.0%	ZrO ₂	CONSISTENCY
ON 60	MESH	13.0 ± 2.0%	MgO	STICKINESS
ON 100	MESH	10.0 ± 2.0%	Na ₂ O	WORKABILITY
ON 200	MESH		MnO	MOISTURE LOSS
Thru 100	MESH	56.0 ± 5.0%	CaO	LINEAR CHANGE
				PENETRATION
THERMAL CONDUCTANCE				COLOR
				COMPRESSIVE STRENGTH

SPALLING LOSS _____

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

BRAND D. C. O. CASTABLE PRODUCT NO. 2012 DATE 2-28-67
 LAB NO. A-2012 WATER FOR MIXING Pour 15%
 REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME 3 Minutes

70.0% Calcined Missouri Flint - 3/4"
 5.0% KY #6 Clay
 25.0% Refcon Cement

SCREEN ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON	1" MESH	0.0%	IGN. LOSS	CURED 800 psi
ON	1/2" MESH	7.0 + 3.0%	SiO ₂	DRIED @ 220°F
ON	1/4" MESH	25.0 + 4.0%	Fe ₂ O ₃	FIRED
ON	6 MESH	19.0 + 3.0%	Al ₂ O ₃	PCE Cone 17-18
ON	8 MESH	6.0 + 2.0%	Cr ₂ O ₃	BULK DENSITY
ON	20 MESH	7.0 + 2.0%	TiO ₂	FLASH SET
ON	40 MESH	2.0 + 2.0%	ZrO ₂	CONSISTENCY
ON	60 MESH	1.0 + 1.0%	MgO	STICKINESS
ON	100 MESH	1.0 + 1.0%	Na ₂ O	WORKABILITY
ON	200 MESH		MnO	MOISTURE LOSS
Thru	100 MESH	32.0 + 5.0%	CaO	LINEAR CHANGE
				PENETRATION
THERMAL CONDUCTANCE				COLOR
				COMPRESSIVE STRENGTH
SPALLING LOSS			CE0105484	

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

BRAND DRY SUREBOND PRODUCT NO. 2013 DATE 4-19-66LAB NO. A-1452 WATER FOR MIXING _____

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME 4 Minutes

29.0% 60 Sand
 47.0% #75 Flour Sand
 19.0% Hamilton #2 Clay
 5.0% GD Soda

SCREEN ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH		IGN. LOSS	CURED
ON 3	MESH		SiO ₂	DRIED @ 220°F 1800 Psi.
ON 4	MESH		Fe ₂ O ₃	FIRED
ON 6	MESH		Al ₂ O ₃	PCE
ON 8	MESH		Cr ₂ O ₃	BULK DENSITY
ON 20	MESH		TiO ₂	FLASH SET
ON 40	MESH	3.0	ZrO ₂	CONSISTENCY
ON 60	MESH	15.0	MgO	STICKINESS
ON 100	MESH	19.0	Na ₂ O	WORKABILITY
ON 200	MESH		MnO	MOISTURE LOSS
Thru 100	MESH	63.0	CaO	LINEAR CHANGE
				PENETRATION
THERMAL CONDUCTANCE				COLOR
				COMPRESSIVE STRENGTH

SPALLING LOSS

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

LIGHT WEIGHT MOLDIT #50 L. I.

PRODUCT NO. 2014

DATE 8-26-66

NO. A-2014

WATER FOR MIXING

REMARKS: NVX to be added to middle of batch

MIX: % BY WEIGHT

MIXING TIME

20.0% PA-3 Perlite
 5.8% Jenner Clay
 38.0% Calcine, 40 mesh
 36.2% Refcon or German Binder
 0.07% NVX

PHYSICAL ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRE
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	Cast BULK DENSITY 49 ± 3 lbs./ft. ³
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
AL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH
SPALLING LOSS			

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

Product DRY SUPER #3000 PRODUCT NO. 2016 DATE 11-8-66

WATER FOR MIXING 24% Dip Consistency

REMARKS: _____

MIX: % BY WEIGHT MIXING TIME 4 Minutes

46.5% Raw Kyanite, 100 Mesh, Aluminum Silicates, Inc.
 25.8% Mullite, 35 Mesh
 15.2% Bancroft Clay
 7.5% "GD" Sodium Silicate
 5.0% Alumina D. C. Fines

SCREEN ANALYSIS			CHEMICAL ANALYSIS		MODULUS OF RUPTURE	
		MESH	IGN. LOSS	3.4	CURED	
ON 3	MESH		SiO ₂	39.3	DRIED @ 220°F 2400 Psi Min.	
ON 4	MESH		Fe ₂ O ₃	0.4	FIRED	
ON 6	MESH		Al ₂ O ₃	54.7	PCE	C/36
ON 8	MESH		Cr ₂ O ₃		BULK DENSITY	
ON 20	MESH		TiO ₂		FLASH SET	
ON 40	MESH	3.0 + 1.0%	ZrO ₂		CONSISTENCY	
ON 60	MESH	14.0 + 3.0%	MgO		STICKINESS	
ON 100	MESH	22.0 + 4.0%	Na ₂ O	2.0	WORKABILITY	
ON 200	MESH		MnO		MOISTURE LOSS	
Thru 100	MESH	61.0 + 5.0%	CaO		LINEAR CHANGE	
					PENETRATION	
AL CONDUCTANCE					COLOR	
CE0105487					COMPRESSIVE STRENGTH	
SPALLING LOSS						

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

BRAND HI ALUMINACRETE - COARSE PRODUCT NO. 2017 DATE 5-10-67; NO. 2017 WATER FOR MIXING _____REMARKS: (For Lukens Steel Mark "Hi-Aluminacrete")MIX: % BY WEIGHT _____ MIXING TIME 4 MinutesBatch Weight

25.0% Tabular Alumina - 1/4 Mesh	250#
40.0% Tabular Alumina - 8 Mesh	400#
35.0% Alcoa CA-25 Binder	350#

SCREEN ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
1/4	MESH	1.0+ 0.5%	IGN. LOSS	CURED
ON 3	MESH		SiO ₂	DRIED @ 220°F 2000 Psi. Min.
ON 4	MESH	3.0 + 2.0%	Fe ₂ O ₃ 0.14%	FIRE
ON 6	MESH		Al ₂ O ₃ 93.0%	PCE C/38
ON 8	MESH	12.0 + 3.0%	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	36.0 + 4.0%	TiO ₂	FLASH SET
ON 40	MESH	5.0 + 2.0%	ZrO ₂	CONSISTENCY
ON 60	MESH	4.0+ 2.0%	MgO	STICKINESS
ON 100	MESH	2.0 + 1.0%	Na ₂ O	WORKABILITY
ON 200	MESH		MnO	MOISTURE LOSS
Thru 100	MESH	37.0 + 5.0%	CaO	LINEAR CHANGE
				PENETRATION
THERMAL CONDUCTANCE				COLOR
				COMPRESSIVE STRENGTH

SPALLING LOSS

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CE/HI (F) 33831

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

BRAND H. S. GUN MIX PRODUCT NO. 2018 DATE 1-3-66

LAB NO. _____ WATER FOR MIXING _____

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME _____

85% Calcined Flint Clay - 6 Mesh
 15% Kentucky #6 Clay

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRE
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
			COLOR
			COMPRESSIVE STRENGTH

SPALLING LOSS

CE0105489

CE/HI (F) 33832

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

AND LT. WT. CASTABLE PRODUCT NO. 2019 DATE 1-10-67

LAB NO. A-1389-2 WATER FOR MIXING 32% Pouring

REMARKS: For Wabash Smelting Company Only

MIX: % BY WEIGHT MIXING TIME

68.0% Insulating Grog
10.0% C-4 Alumina, Alcan
20.0% Alcoa Binder
2.0% Ky #6 Clay
0.2% Soda of Bicarbonate (added)

SCREEN ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH		IGN. LOSS	CURED
ON 3	MESH		SiO ₂	DRIED @ 220°F 200 psi
ON 4	MESH	TRACE	Fe ₂ O ₃	FIRE
ON 6	MESH	1.0 + 1.0%	Al ₂ O ₃	PCE
ON 8	MESH	5.0 + 2.0%	Cr ₂ O ₃	CAST BULK DENSITY 74 ± 4 lbs./ft. ³
ON 20	MESH	20.0 + 4.0%	TiO ₂	FLASH SET
ON 40	MESH	16.0 ± 3.0%	ZrO ₂	CONSISTENCY
ON 60	MESH	16.0 ± 3.0%	MgO	STICKINESS
ON 100	MESH	10.0 + 2.0%	Na ₂ O	WORKABILITY
ON 200	MESH		MnO	MOISTURE LOSS
Thru 100	MESH	32.0 ± 4.0%	CaO	LINEAR CHANGE
				PENETRATION
RMAL CONDUCTANCE				COLOR
				COMPRESSIVE STRENGTH
SPALLING LOSS				

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

SPAND A-1388 GUNNING CASTABLE PRODUCT NO. 2020 DATE 3-7-67LAB NO. 2020 WATER FOR MIXING _____REMARKS: For Export Customer Hellenic

MIX: % BY WEIGHT _____ MIXING TIME _____

75.0% Calcined Missouri Flint Clay - 6 Mesh
 5.0% Jenner Clay
 20.0% Tito Cement

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRED
ON 6	MESH TR	Al ₂ O ₃	PCE
ON 8	MESH 6.0	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH 39.0	TiO ₂	FLASH SET
ON 40	MESH 14.0	ZrO ₂	CONSISTENCY
ON 60	MESH 6.0	MgO	STICKINESS
ON 100	MESH 5.0	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru 100	MESH 30.0	CaO	LINEAR CHANGE
			PENETRATION
RMAL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH
SPALLING LOSS			

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

ND STAVE GROUT PRODUCT NO. 2022 DATE 5-9-67

LAB NO. A-1457 WATER FOR MIXING 23% Pour

REMARKS: Mix has set time retarded to 6 hours

MIX: % BY WEIGHT MIXING TIME 4 minutes

Batch Weight

60.0% Brick Grm 8 x 40 Mesh	600#
5.0% Jenner Clay	50#
35.0% German Binder or Refcon Ct.	350#
0.15% Boric Acid (added)	1-1/2#

SEEN ANALYSIS				CHEMICAL ANALYSIS		MODULUS OF RUPTURE	
ON	1/4	MESH		IGN. LOSS		CURED	
ON	3	MESH		SiO ₂		DRIED @ 220°F Min. 1200 Psi.	
ON	4	MESH		Fe ₂ O ₃ 0.8		FIRED	
ON	6	MESH		Al ₂ O ₃ 46.0		PCE	C/15
ON	8	MESH	1.0 + 0.5%	Cr ₂ O ₃		CAST BULK DENSITY	115#/ft. ³
ON	20	MESH	28.0 + 5.0%	TiO ₂		FLASH SET	6 hours
ON	40	MESH	16.0 + 3.0%	ZrO ₂		CONSISTENCY	
ON	60	MESH	7.0 + 2.0%	MgO		STICKINESS	
ON	100	MESH	6.0 + 2.0%	Na ₂ O		WORKABILITY	
ON	200	MESH		MnO		MOISTURE LOSS	
Thru	100	MESH	42.0 + 5.0%	CaO		LINEAR CHANGE	
						PENETRATION	
THERMAL CONDUCTANCE						COLOR	
						COMPRESSIVE STRENGTH	
SPALLING LOSS							

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

BRAND LT. WT. MOLDIT #50 PRODUCT NO. 2025 DATE 9-20-67
 LAB NO. Replaced A-2065 WATER FOR MIXING 49% for Pouring
 REMARKS: NVX added to middle of batch. This is a gunning mixture.

MIX: % BY WEIGHT _____ MIXING TIME 3 Minutes

19.2 % PA-320 Expanded Perlite
 9.7 % Jenner Clay
 36.5 % Calcine, 40 Mesh
 34.6 % Tito or Lumnite Cement
 0.07 % NVX

SCREEN ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH		IGN. LOSS	CURED
ON 3	MESH		SiO ₂	DRIED @ 220°F
ON 4	MESH		Fe ₂ O ₃	FIRE
ON 6	MESH		Al ₂ O ₃	PCE
ON 8	MESH	TR	Cr ₂ O ₃	CAST BULK DENSITY 48 + 3 lbs./ft. ³
ON 20	MESH	10 ± 3.0%	TiO ₂	FLASH SET
ON 40	MESH	11 ± 3.0%	ZrO ₂	CONSISTENCY
ON 60	MESH	6 ± 2.0%	MgO	STICKINESS
ON 100	MESH	3 ± 1.0%	Na ₂ O	WORKABILITY
ON 200	MESH		MnO	MOISTURE LOSS
Thru 100	MESH	70 ± 4.0%	CaO	LINEAR CHANGE
				PENETRATION
THERMAL CONDUCTANCE				COLOR
				COMPRESSIVE STRENGTH

SPALLING LOSS _____

CE0105493

CE/HI (F) 33836

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

BRAND MOR-MIX PRODUCT NO. 2026 DATE 10-30-67

LAB NO. _____ WATER FOR MIXING _____

REMARKS: Special mix for J. D. Morrissey, Inc. for use at Fairless Works, U. S. SteelR&I Order No. 14964MIX: % BY WEIGHT _____ MIXING TIME 4 minutesBatch Weight

53.0% Brick Grog 1" with fines	530 lbs.
22.0% Brick Grog 8 x 40 Mesh	220 lbs.
5.0% Jenner Clay	50 lbs.
20.0% Lumnite Cement Only	200 lbs.

1,000 lbs.

SCREEN ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON $\frac{1}{8}$ " MESH	0.0%		IGN. LOSS	CURED
ON $\frac{3}{4}$ " MESH	2.0%		SiO ₂	DRIED @ 220°F 400 psi. Min.
ON 4 MESH	28.0%		Fe ₂ O ₃	FIRE
ON 6 MESH			Al ₂ O ₃	PCE
ON 8 MESH	17.0%		Cr ₂ O ₃	BULK DENSITY
ON 20 MESH	14.0%		TiO ₂	FLASH SET NONE, One Hour
ON 40 MESH			ZrO ₂	CONSISTENCY
ON 60 MESH	6.0%		MgO	STICKINESS
ON 100 MESH	6.0%		Na ₂ O	WORKABILITY
ON 200 MESH			MnO	MOISTURE LOSS
Thru 100 MESH	26.0%		CaO	LINEAR CHANGE
				PENETRATION
THERMAL CONDUCTANCE				COLOR
				COMPRESSIVE STRENGTH

SPALLING LOSS _____

CE0105494

CE/HI (F) 33837

A-2050
(FORMERLY BLAST FURNACE CASTABLE)

Chemical Analysis

Al ₂ O ₃	49.2
SiO ₂	41.2
TiO ₂	1.4
FeO	0.2
Fe ₂ O ₃	1.2
H ₂ O	Trace
CaO	6.5
Alkalie	0.3

<u>Water for Casting</u>	13%
<u>Water for Tamping</u>	8.5%
<u>Maximum Service Temp.</u>	2900°F
<u>PCE</u> ¹	Cone 32
<u>Hot Load Deformation</u> ⁶	
2460°F	1.2%
2640°F	6.3%
<u>Thermal Conductivity</u>	
Mean Temp.	K
500°F	5.30
1000°F	5.28
1500°F	5.38
2000°F	5.60

Grain Size Distribution

+	4	1.7%
-	4 + 8	38.9
-	8 + 16	19.2
-	16 + 30	6.2
-	30 + 50	1.6
-	50 + 100	1.7
-	100 + 200	7.6
-	200	23.1

Physical Properties

<u>Temp °F</u>	<u>Lin Chg %²</u>	<u>Bulk Density pcf³</u>	<u>Cold Crushing Strength, psi⁴</u>	<u>Mod. Rup, psi⁵</u>
220	Nil	135.5	3304	922
500	-.3	131.0	1906	461
1000	-.2	129.8	1912	327
1500	-.4	129.9	1606	310
2000	-.1	128.0	1437	297
2500	-.3	129.0	7845	490
2800	-.6	134.2	5250	888

1. ASTM C-2456 "Pyrometric Cone Equivalent (PCE) of Refractory Materials"
2. ASTM C-269-57 T, "Permanent Linear Change on Firing of Castable Refractories" modified to include 5 hour heat soaks at indicated temperatures.
3. ASTM C 134-51, "Size and Bulk Density of Refractory Brick" modified to include refractory castables after 5 hour heat soaks at indicated temperatures.
4. ASTM C 133-55, "Cold Crushing Strength and Modulus of Rupture of Refractory Brick and Shapes" modified as "3".
5. ASTM C 268-62T, "Modulus of Rupture of Castable Refractories", modified as "2".
6. ASTM 16-62 "Testing Refractory Brick Under load at High Temperatures" modified to include refractory castables.

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

7, Blast Furnace Castable PRODUCT NO. 2050 DATE May 12, 1961

LAB NO. A-2050 WATER FOR MIXING _____

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME 4 Minutes

62.0% Naylor 4 Mesh
21.0% Raw Kyanite 100 Mesh
17.0% Refcon Cement

*64 Naylor 42
325 + 400 mesh 21
Refcon 17*

ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH		IGN. LOSS	CURED
ON 3	MESH		SiO ₂	DRIED @ 220°F
ON 4	MESH		Fe ₂ O ₃	FIRE
ON 6	MESH		Al ₂ O ₃	PCE
ON 8	MESH		Cr ₂ O ₃	BULK DENSITY
ON 20	MESH		TiO ₂	FLASH SET
ON 40	MESH		ZrO ₂	CONSISTENCY
ON 60	MESH		MgO	STICKINESS
ON 100	MESH		Na ₂ O	WORKABILITY
ON 200	MESH		MnO	MOISTURE LOSS
Thru 100	MESH	40 ± 5.0%	CaO	LINEAR CHANGE
				PENETRATION
THERMAL CONDUCTANCE				COLOR
				COMPRESSIVE STRENGTH
SPALLING LOSS				

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STANDARD MIX SPECIFICATION

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME _____

62.0% Naylor Clay, 6 Mesh
21.0% Raw Kyanite, 325 Mesh
17.0% Refcon Cement

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

, Blast Furnace Castable PRODUCT NO. 2052 DATE 1-1-66

LAB NO. _____ WATER FOR MIXING _____

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME _____

62.0% Naylor, 6 Mesh
 21.0% Raw Kyanite, 100 Mesh
 17.0% Refcon Cement

PHYSICAL ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH		IGN. LOSS	CURED
ON 3	MESH		SiO ₂	DRIED @ 220°F
ON 4	MESH		Fe ₂ O ₃	FIRE
ON 6	MESH		Al ₂ O ₃	PCE
ON 8	MESH		Cr ₂ O ₃	BULK DENSITY
ON 20	MESH		TiO ₂	FLASH SET
ON 40	MESH		ZrO ₂	CONSISTENCY
ON 60	MESH		MgO	STICKINESS
ON 100	MESH		Na ₂ O	WORKABILITY
ON 200	MESH		MnO	MOISTURE LOSS
Thru	MESH		CaO	LINEAR CHANGE
				PENETRATION
THERMAL CONDUCTANCE				COLOR
				COMPRESSIVE STRENGTH

SPALLING LOSS _____

CE0105498

CE/HI (F) 33841

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

ND Moldit 15 PRODUCT NO. 2053 DATE 5-10-67
 LAB NO. A-2053 WATER FOR MIXING 10 to 11% Casting
10#/100# bag
 REMARKS: 5#/ 50# bag

MIX: % BY WEIGHT _____ MIXING TIME 4 Minutes

Batch Weight

69.5% Calcined Missouri
 Flint Clay, 4 Mesh 750#
 9.3% Afton Clay 100#
 7.3% D. C. Fines, Alumina 80#
 13.9% CA-25 Alcoa Binder 150#
 0.15% Sodium Bicarbonate (added) 2#

SCREEN ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH		IGN. LOSS	CURED
ON 3	MESH		SiO ₂	DRIED @ 220°F 400 psi. Min.
ON 4	MESH	1.0 ± 1.0%	Fe ₂ O ₃	FIRE
ON 6	MESH	6.0 ± 2.0%	Al ₂ O ₃	PCE
ON 8	MESH	14.0 ± 3.0%	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	31.0 ± 4.0%	TiO ₂	FLASH SET
ON 40	MESH	8.0 ± 2.0%	ZrO ₂	CONSISTENCY
ON 60	MESH	5.0 ± 2.0%	MgO	STICKINESS
ON 100	MESH	2.0 ± 2.0%	Na ₂ O	WORKABILITY
ON 200	MESH		MnO	MOISTURE LOSS
Thru 100	MESH	33.0 ± 4.0%	CaO	LINEAR CHANGE
				PENETRATION
THERMAL CONDUCTANCE				COLOR
				COMPRESSIVE STRENGTH
SPALLING LOSS			CE0105499	

CE/HI (F) 33842

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

1 LT. WT. MOLDIT 50 PRODUCT NO. 2065 DATE 2-24-66
 NO. A-2056 WATER FOR MIXING _____
 REMARKS: NVX to be added to middle of batch

 MIX: % BY WEIGHT _____ MIXING TIME _____

20.0% PA-3 Perlite
 5.8% Jenner Clay
 38.0% Calcine, 40 mesh
 36.2% Tito cement or Lumnite
 0.07% NVX

PHYSICAL ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
1/4	MESH		IGN. LOSS	CURED
ON 3	MESH		SiO ₂	DRIED @ 220°F
ON 4	MESH		Fe ₂ O ₃	FIRED
ON 6	MESH		Al ₂ O ₃	PCE
ON 8	MESH		Cr ₂ O ₃	Cast BULK DENSITY 49 ± 3 lbs/ft ³
ON 20	MESH		TiO ₂	FLASH SET
ON 40	MESH		ZrO ₂	CONSISTENCY
ON 60	MESH		MgO	STICKINESS
ON 100	MESH		Na ₂ O	WORKABILITY
ON 200	MESH		MnO	MOISTURE LOSS
Thru	MESH		CaO	LINEAR CHANGE
				PENETRATION
THERMAL CONDUCTANCE				COLOR
SPALLING LOSS				COMPRESSIVE STRENGTH

CE0105500

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

: 1 MD Gunning Mix PRODUCT NO. 2056-1 DATE 1-1-66
 LAB NO. _____ WATER FOR MIXING _____
 REMARKS: _____

 MIX: % BY WEIGHT _____ MIXING TIME _____

80.0% Magnesite, Japanese Seawater
 14.0% Jebcolite
 2.0% Goulac
 5.0% KY#6 Clay

ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRE
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
IAL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH
SPALLING LOSS		CE0105501	

CE/HI (F) 33844

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

D LINS 50

PRODUCT NO. A-2058 DATE 2-1-66

LAB NO. WATER FOR MIXING

REMARKS:

MIX: % BY WEIGHT MIXING TIME

21.0% Perlite Concrete Aggregate
 10.7% Jenner Clay
 26.5% C-4 Alumina
 41.8% CA-25 (Alcoa) Cement

N ANALYSIS			CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH		IGN. LOSS	CURED
ON 3	MESH		SiO ₂	DRIED @ 220°F
ON 4	MESH		Fe ₂ O ₃	FIRE
ON 6	MESH		Al ₂ O ₃	PCE
ON 8	MESH		Cr ₂ O ₃	Cast BULK DENSITY 50 ± 3 lbs.
ON 20	MESH		TiO ₂	FLASH SET
ON 40	MESH		ZrO ₂	CONSISTENCY
ON 60	MESH		MgO	STICKINESS
ON 100	MESH		Na ₂ O	WORKABILITY
ON 200	MESH		MnO	MOISTURE LOSS
Thru	MESH		CaO	LINEAR CHANGE
				PENETRATION
IAL CONDUCTANCE				COLOR
				COMPRESSIVE STRENGTH
SPALLING LOSS				

CE0105502

CE/HI (F) 33845

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

BRAND HIGH FLUIDITY CEMENT PRODUCT NO. 2063 DATE 3-7-67

LAB NO. _____ WATER FOR MIXING _____

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME _____

85.4% Kyanite, 100 Mesh
 1.38% M&D Clay
 0.18% Altagel Gel
 13.04% Goulac

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRED
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
RMAL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH
SPALLING LOSS		CE0105503	

CE/HI (F) 33846

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

 BRAND THERMOCOUPLE CEMENT PRODUCT NO. 2064 DATE 3-7-67

LAB NO. _____ WATER FOR MIXING _____

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME _____

55.5% Mullite, 35 Mesh
 18.6% Mullite, 100 Mesh
 4.7% Hamilton #2 Clay
 21.2% CA-25
 0.75% Soda Bicarbonate

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRE
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
THERMAL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH
SPALLING LOSS			

CE0105504

CE/HI (F) 33847

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

 BRAND BLAST FURNACE CASTABLE PRODUCT NO. 2067 DATE 3-8-67

 LAB NO. RP-63-57 WATER FOR MIXING 13.5% Casting

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME _____

50% Naylor, 6 Mesh
 30% Kyanite, 35 Mesh
 17% Refcon
 3% Hamilton #2 Clay

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRED
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
THERMAL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH
SPALLING LOSS			

CE0105505

CE/HI (F) 33848

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

, BLAST FURNACE CASTABLE PRODUCT NO. 2067-1 DATE 12-6-66
 LAB NO. A-2067-1 WATER FOR MIXING Cast 15.0%
 REMARKS: Per Gower to Nelson 5-9-66

MIX: % BY WEIGHT _____ MIXING TIME 4 Minutes

48.5% Naylor Clay, 6 Mesh
 34.0% Raw Kyanite, 100 Mesh
 2.9% Hamilton Clay
 14.6% Refcon Cement (only)

V ANALYSIS				CHEMICAL ANALYSIS		MODULUS OF RUPTURE	
Gr	1/4	MESH		IGN. LOSS		CURED	
ON	3	MESH		SiO ₂	40.6%	DRIED @ 220°F 400 Psi. Min.	
ON	4	MESH	0.0%	Fe ₂ O ₃	1.0%	FIRED @2800°F. - 535 Psi.	
ON	6	MESH		Al ₂ O ₃	50.9%	PCE Cone 33	
ON	8	MESH	14.0%	Cr ₂ O ₃		CAST BULK DENSITY 131 lbs/ft. ³	
ON	20	MESH	25.0%	TiO ₂	0.9%	FLASH SET None	
ON	40	MESH		ZrO ₂		CONSISTENCY	
ON	60	MESH		MgO	0.03%	STICKINESS	
ON	100	MESH	10.0%	Na ₂ O		WORKABILITY	
ON	200	MESH	10.0%	MnO		MOISTURE LOSS	
Thru	200	MESH	51.0%	CaO		LINEAR CHANGE @2800°F. +1.0%	
				FeO	0.3%	PENETRATION	
				SO ₃	0.04%	COLOR	
				Alkali	0.3%	COMPRESSIVE STRENGTH @2800°F. 187	
SPALLING LOSS							

CE0105506

CE/HI (F) 33849

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

BRAND BLAST FURNACE CASTABLE PRODUCT NO. 2067-1 DATE 3-7-67LAB NO. RP-63-57 WATER FOR MIXING _____REMARKS: For USSMIX: % BY WEIGHT MIXING TIME _____

48.5% Naylor Clay, 6 Mesh
 34.0% Kyanite, 100 Mesh
 14.6% Refcon
 2.9% Hamilton Clay

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRE
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
THERMAL CONDUCTANCE			PENETRATION
			COLOR
			COMPRESSIVE STRENGTH
SPALLING LOSS			

CE0105507

CE/HI (F) 33850

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

PND AND BLAST FURNACE CASTABLE PRODUCT NO. 2068 DATE 3-7-67LAB NO. RP 63-57 WATER FOR MIXING _____REMARKS: For Bethlehem Steel

MIX: % BY WEIGHT _____ MIXING TIME _____

48.5% Naylor, 6 Mesh
 34.0% Kyanite, 100 Mesh
 14.1% CA-25
 2.5% Hamilton Clay

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRE
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
THERMAL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH
SPALLING LOSS		CE0105508	

CE/HI (F) 33851

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

RD AND BLAST FURNACE GUNNING CASTABLEPRODUCT NO. 2072DATE 3-7-67LAB NO. RP-63-57 & 66-35

WATER FOR MIXING _____

REMARKS: _____

MIX: % BY WEIGHT _____

MIXING TIME _____

53.0% Naylor, 6 Mesh
 37.2% Kyanite, 100 Mesh
 6.6% CA-25
 3.2% Hamilton Clay

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRED
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
RMAL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH
SPALLING LOSS			

CE0105509

CE/HI (F) 33852

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

BRAND LADLE WELL RAMMING MIX PRODUCT NO. 2073 DATE 3-7-67LAB NO. (See Res. 90-A Ramming Mix) WATER FOR MIXING _____

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME _____

70.5% Exolon 8 Mesh with Fines
 9.9% Exolon DCF
 14.6% Hamilton Clay
 2.0% Albany Slip Clay
 3.0% Goulac
 1.3% Water

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRE
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
THERMAL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH
SPALLING LOSS			

CE0105510

CE/HI (F) 33853

STANDARD MIX SPECIFICATION

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME _____

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRED
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
RMAL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH

CE/HI (F) 33854

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

BRAND EXOTHERMIC BOTTOM MIX PRODUCT NO. 2075 DATE 3-7-67LAB NO. Patent WATER FOR MIXING _____

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME _____

2.06% Aluminum Powder, 100 Mesh
 0.835 Fluorspar, 100 Mesh
 58.30 Cal. Dolomite
 33.30 Standard Lime Magnesite
 5.50 Magnetite

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRED
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
THERMAL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH

SPALLING LOSS _____

CE0105512

CE/HI (F) 33855

REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

BRAND _____ PRODUCT NO. 2076 DATE 3-8-67

LAB NO. RP-6627 WATER FOR MIXING _____

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME _____

36.1% Naylor, 4 Mesh
 28.1% Bauxite RASC, 8 Mesh
 9.0% Kyanite, Comm., 100 Mesh
 1.8% Hamilton #2 Clay
 25.0% CA-25
 0.125 Sodium Bicarbonate

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRE
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
			COLOR
			COMPRESSIVE STRENGTH
THERMAL CONDUCTANCE			
SPALLING LOSS			

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REFRACTORY AND INSULATION CORPORATION

STANDARD MIX SPECIFICATION

AND NTA MIX PRODUCT NO. 4016 DATE 2-17-66

LAB NO. _____ WATER FOR MIXING _____

REMARKS: _____

MIX: % BY WEIGHT _____ MIXING TIME _____

55 gallons NTA - 150

5 gallons Triethanolamine

SCREEN ANALYSIS		CHEMICAL ANALYSIS	MODULUS OF RUPTURE
ON 1/4	MESH	IGN. LOSS	CURED
ON 3	MESH	SiO ₂	DRIED @ 220°F
ON 4	MESH	Fe ₂ O ₃	FIRE
ON 6	MESH	Al ₂ O ₃	PCE
ON 8	MESH	Cr ₂ O ₃	BULK DENSITY
ON 20	MESH	TiO ₂	FLASH SET
ON 40	MESH	ZrO ₂	CONSISTENCY
ON 60	MESH	MgO	STICKINESS
ON 100	MESH	Na ₂ O	WORKABILITY
ON 200	MESH	MnO	MOISTURE LOSS
Thru	MESH	CaO	LINEAR CHANGE
			PENETRATION
THERMAL CONDUCTANCE			COLOR
			COMPRESSIVE STRENGTH
SPALLING LOSS		CE0105514	

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