NARCO CONFIDENTIAL-RESTRICTED



NARCOGUN CM 343

Made at: Womelsdorf, PA

PRODUCT LIFE: NOV. 11, 1964 TO JAN. 24, 1977

ASBESTOS DATES: NOV. 11, 1964 TO JAN. 24, 1977 *

* asbestos removed by discontinuing product

NARCOGUN CM 343 MIXES: 311

FORM 116 B

NORTH AMERICAN REFRACTORIES COMPANY

Mix Instructions NARCO CONFIDENTIAL-RESTRICTED

Plant Womelsdorf - Basic

Date April 16, 1963

Brand CM-18 Gun Mix

Mix No. 320A

Process Chrome Gun Mix

Burn

Shrinkage

RECEIVED
APR 19 1963

JBP		
DJB		
RCC		
CES		
CSH		
[illegible]		
STK. IN		
RET. TO		
FILE		

Mix

Chrome Ore	-8+14M	45 %
" "	-14+48M	17 %
" "	-48M	38 %
Gleason Clay	A.F.	4.5 % (added)
"GD" Sodium	Silicate	6.5 % (added)

Special Instructions Reason for change: Adjust mix fraction to 100% total and show proper size for fractions.

Control Specifications

To be packaged in 50 lb. or 100 lb bags as ordered.

Replaces Sheet Dated 12/5/62

4/23/63

Approved [signature] Research

Approved [signature] Operating

Approved [signature] Plant

NORTH AMERICAN REFRACTORIES COMPANY

Mix Instructions

NARCO CONFIDENTIAL-RESTRICTED

Plant Womelsdorf, Pa.

Date January 31, 1977

Brand NARMAG CM-18 GUN MIX

Mix No. 320 F

Process Chrome gun mix

Burn

Shrinkage

Mix

Chrome Ore	-8 +20 mesh	40% *
Chrome Ore	-20 +~~35~~ mesh	15 *
Chrome Ore	-~~35~~ mesh	31 *
Refcon Cement	—	6
Hector Bentonite		4
GD Sodium Silicate		2
Attagel 50		2
		100%

* Proportions can be adjusted to ~~meet~~ approximate suggested screen analysis.

Special Instructions Screen GD Silicate through a 10 mesh screen to eliminate lumps. "Attagel 50" (Attapulgus Division – Engelhard Minerals & Chemicals Corp.) distributed by VanHorn, Metz & Co., 201 East Elm St., Conshohocken, Pa 19428

Control Specifications See back of sheet for suggested screen analysis of mix.

Change to eliminate asbestos

Base on Work Order No. 1007

Replaces Sheet Dated 11/10/76 (no 320 E)

Approved [signature] Research

Approved [signature] Operating

Approved [signature] Plant

NORTH AMERICAN REFRACTORIES COMPANY

NARCO CONFIDENTIAL-RESTRICTED DATE 7/17/72

FROM R. C. Coleman

TO L. Dilley

SUBJECT CM-18 GUN MIX FOR STANDARD STEEL WORKS.

cc: R. N. Smith
C. S. Hursh

REFER YOUR LETTER DATED

Use the following guide lines for grain sizing when manufacturing this order.

MESH	CUMULATIVE % - TARGET
6	Trace
8	2.5
10	10.0
14	19.0
20	29.0
28	37.0
35	44.0
48	51.0
65	59.0
100	66.0
150	71.0
200	75.0
-200	25.0

The above represents a average of 12 screen analyses from the period August '67 through September 1968. Adjust your mixes as close to this as possible.

RCC/aj

FRACTIONS FOR CHROME ORE

-8+20

-20+35

-35

FORM 116 B

NORTH AMERICAN REFRACTORIES COMPANY

Mix Instructions

NARCO CONFIDENTIAL-RESTRICTED

Plant Womelsdorf

Date November 10, 1965

Brand CM-18

Mix No. 320 E

Process Chrome Gun mix

Burn

Shrinkage

Mix

Chrome Ore	-8+20 mesh	40%
Chrome Ore	-20+48 mesh	15%
Chrome Ore	-48 mesh	31 2/3%
Rolandshuette cement		6%
Hector Bentonite		4%
GD Sodium Silicate		2%
7K05 Asbestos		1 1/3%
		100%

Special Instructions Asbestos should be shredded by hand to break up lumps. Hand screen "GD" silicate through a 10 mesh screen to eliminate lumps.

Control Specifications

Reason for change: return to earlier mix because of drying problems with 320D.

Approved Robert L. Hess Research

Approved R. F. Whitford Operating

Approved [signature] Plant

Replaces Sheet Dated

August 18, 1965

Typed 11/22/65 [illegible]

NORTH AMERICAN REFRACTORIES COMPANY

Mix Instructions

NARCO CONFIDENTIAL-RESTRICTI

Plant Womelsdorf

Date August 18, 1965

Brand CM-18

Mix No. 320 D

Process Chrome Gun Mix

Burn

Shrinkage

Mix

Chrome Ore	-8 + 20 mesh	41 1/4 %
Chrome Ore	-20 + 48 mesh	15 %
Chrome Ore	-48 mesh	31 %
GD Sodium Silicate		6 %
Turner Soft clay	-20 mesh	4 %
7K05 Asbestos		1 3/4 %
Rolandshutte Cement		1 %
		100 %

Special Instructions Asbestos should be shredded by hand to break up lumps. Hand screen "GD" silicate through a 10 mesh screen to eliminate lumps.

Control Specifications

Replaces Sheet Dated March 2, 1965

Approved Robert L. Hess Research

Approved R. F. Whitlock Operating

Approved [illegible] Plant

FORM 116 B

NORTH AMERICAN REFRACTORIES COMPANY

Mix Instructions

NARCO CONFIDENTIAL-RESTRICTED

Plant Womelsdorf

Date March 2, 1965

Brand CM-18

Mix No. 320 C

Process Chrome Gun Mix

Burn

Shrinkage

Mix

Chrome Ore	-8 + 20 mesh	40 %
Chrome Ore	-20 + 48 mesh	15 %
Chrome Ore	-48 mesh	31⅓ %
Rolandshuette (shuette) Cement		6 %
Hector Bentonite		4 %
GD Sodium Silicate		2 %
7K05 Asbestos		1⅓ %
		100 %

Special Instructions Asbestos should be shredded by hand to break up lumps. Hand screen "GD" silicate through a 10 mesh screen to eliminate lumps.

Control Specifications

Replaces Sheet Dated

July 3, 1963

also Mix No. 353, date 1/15/65

Approved Robert L. Hess — Research

Approved R. F. Whitford — Operating

Approved — Plant

FORM 116 B

NORTH AMERICAN REFRACTORIES COMPANY

Mix Instructions NARCO CONFIDENTIAL-RESTRICTED

Plant Womelsdorf - Basic

Date July 3, 1963

Brand CM-18 Gun mix

Mix No. 320 B

Process

Chrome Gun mix

Burn

Shrinkage

RECEIVED JUL 5 1963 NAR... 20 WOMELSDORF

Mix

Chrome Ore		-8+14 M	45%
"	"	-14+48 M	17%
"	"	-48 M	38%
Gleason clay		A.F.	4.5% (added)
"GD" Sodium Silicate			6.5% (added)
Asbestos 7K05			2.0% (added)

JBP		
DJB		
RCC		
CEG		
CGM		
CEG		
STK.		
DET. TO		

Special Instructions

Reason for change: To add asbestos

Control Specifications

Signed Engineering

Approved F W Schroeder Research

Approved R. F. Whitford Operating

Approved [signature] Plant

Replaces Sheet Dated

April 16, 1963

7/3/63

bam

Form M67

NARCO CONFIDENTIAL-RESTRICTED

NORTH AMERICAN REFRACTORIES COMPANY

MIX INSTRUCTIONS

PLANT Womelsdorf - Basin

DATE March 21 1962

BRAND MC Gun Mix

MIX NO. 360

PROCESS

BURN

SHRINKAGE

MIX

Chrome Ore	-8+14M	10 %
" "	-14+35M	10 %
" "	-35M	10 %
Periclase	-8+14M	30 %
"	-14+35M	20 %
"	-35M	20 %
Gleason Clay	A.F.	3 % (added)
GD SODIUM SILICATE		4 % (added)

SPECIAL INSTRUCTIONS

CONTROL SPECIFICATIONS

To be packaged in 100 lb bags.

APPROVED [signature] Research

APPROVED [signature] Operating

APPROVED [signature] Plant

Replaces Sheet Dated

1/5/62 New Mix

[illegible]