



ALLIED
MINERAL
PRODUCTS, INC.

ARMORMAX[®] NRSA

VIBRATION CAST

General Information

ARMORMAX[®] NRSA is an 82% alumina, low-cement castable refractory with a high stainless steel fiber content to improve overall fracture toughness and thermal shock resistance. The enhanced flow of the refractory base mix allows this product to be mixed in most field mixers. It is particularly suitable for use in nose ring, bull nose and cooler curb applications in the cement industry as well as high impact areas in biomass-burning boilers and other mineral processing applications. It can also be used around doors and sills in metal processing furnaces that experience both thermal cycling and high mechanical abuse. The metal fibers used provide the optimum resistance to high temperature oxidation with continuous operation to 1200°C (2200°F) and intermittent operation to 1400°C (2600°F). The base refractory mix without the fibers is suitable for temperatures to 1700°C (3100°F).

Chemical Analysis

Al ₂ O ₃	82.4%
SiO ₂	11.9%
TiO ₂	2.2%
CaO	2.1%
Fe ₂ O ₃	0.9%
Alkalies	0.2%
Other	0.5%

Maximum Use Temperature

1430°C (2600°F)

Material Required Vibration Cast

3.00 g/cm³ (187 lb/ft³)

Grain Size

2 mm (8 mesh) and finer

Installation Method

Vibration Cast

Standard Packaging

25 kg (55 lb) multi-wall paper bags

VIBRATION CAST DATA

Temperature		Density		PLC [†]	MOR		CCS		Porosity
°C	°F	g/cm ³	lb/ft ³	%	MPa	psi	MPa	psi	%
110	230	2.95	184	-	23.1	3400	94.5	13900	11
815	1500	3.00	187	-0.1	34.0	5000	182.9	26900	16
1093	2000	2.96	185	-0.2	30.3	4450	145.5	21400	18
1400	2550	2.88	180	0.4	26.9	3950	107.4	15800	19

† Permanent Linear Change After Firing

SET TIMES AND WATER REQUIREMENTS

	Vibration Cast
Water Required	5 - 6%
Working Time	1 - 2 hrs
Initial Set	4 - 8 hrs
Final Set	8 - 12 hrs

THERMAL SHOCK DATA

2200°F Prefired and Shock Temperature (5 Cycles)

Unshocked CMOR, psi	5400
Shocked CMOR, psi	4000
Strength Retained, %	74

Allied Mineral Products, Inc. supplies a complete line of monolithic refractories for industrial applications. For more information or a complete evaluation of your refractory requirements, please contact your local Allied representative.

Warning: Contains aluminum oxide, aluminosilicates, cement, and silica. The International Agency for Research on Cancer (IARC) has classified crystalline silica inhaled in the form of quartz or cristobalite carcinogenic to humans. Refer to Material Safety Data Sheet for additional information and disposal instructions. Avoid breathing dust. Wear NIOSH approved respirator during installation, removal, and disposal of product to prevent inhalation of dust. Avoid contact with skin and eyes. Cement powder or freshly mixed castable may cause eye and skin irritation. Steam spalling, which can lead to personal injury, may result from improper drying and firing procedures. In case of eye contact, flush immediately and repeatedly with water and consult a physician. For safest use and optimum performance, proper practices must be followed.

(ARNMAXNRSA)

6/11/2014

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