



TUFF-FLO 60 A

VIBRATION CAST, PUMP CAST, SELF-FLOW

General Information

TUFF-FLO 60 A is an andalusite-containing, low-cement, 60% alumina castable with a combination of good strengths and excellent thermal shock resistance. This castable may be vibration cast, pump cast or self-flowed. TUFF-FLO 60 A has a very low level of iron oxide and alkalies, improving the refractoriness and hot strengths. These properties provide vast utilization opportunities such as forging furnace applications, mineral processing, lime sludge kilns, cyclic boilers and wood fired furnaces. This blend is particularly attractive for car decks, curbs, pier blocks, jambs, sills, etc. and is well suited for use in pre-formed shapes.

Chemical Analysis

		Maximum Use Temperature	1700°C (3100°F)
Al ₂ O ₃	59.6%	Material Required Vibration Cast	2.58 g/cm ³ (161 lb/ft ³)
SiO ₂	36.2%	Grain Size	5 mm (4 mesh) and finer
CaO	1.8%	Installation Methods	Vibration Cast, Pump Cast, Self-Flow
TiO ₂	1.3%	Standard Packaging	25 kg (55 lb) multi-wall paper bags
Fe ₂ O ₃	0.7%		
Alkalies	0.2%		
Other	0.2%		

VIBRATED DATA

Temperature		Density		PLC [†]	MOR		CCS		HMOR		Porosity	K-factor*	
°C	°F	g/cm ³	lb/ft ³	%	MPa	psi	MPa	psi	MPa	psi	%	W·m ⁻¹ ·K ⁻¹	BTU·in ft ² ·hr·°F
110	230	2.60	162	-	-	-	-	-	-	-	-	2.28	15.8
815	1500	2.58	161	-0.1	15.2	2200	104.7	15200	-	-	15	2.05	14.2

[†] Permanent Linear Change After Firing

*Estimated

SELF-FLOW DATA

Temperature		Density		PLC [†]	MOR		CCS		HMOR		Porosity	K-factor*	
°C	°F	g/cm ³	lb/ft ³	%	MPa	psi	MPa	psi	MPa	psi	%	W·m ⁻¹ ·K ⁻¹	BTU·in ft ² ·hr·°F
110	230	2.56	160	-	-	-	-	-	-	-	-	1.80	12.5
815	1500	2.56	160	-0.2	11.0	1600	61.3	8900	-	-	13	1.92	13.3
1093	2000	2.53	158	-0.1	10.8	1570	73.0	10600	-	-	16	2.02	14.0
1399	2550	2.40	150	-0.6	10.6	1540	71.6	10400	5.4	780	18	1.88	13.0

[†] Permanent Linear Change After Firing

*Estimated

SET TIMES AND WATER REQUIREMENTS

	Vibration Cast	Self-Flow
Water Required	3.6 - 4.6%	6.0 - 7.6%
Working Time	2 - 4 hrs	3 - 5 hrs
Initial Set	3 - 5 hrs	3 - 6 hrs
Final Set	4 - 10 hrs	6 - 14 hrs

THERMAL SHOCK DATA (Self-Flow)

2200°F Prefired and Shock Temperature (5 Cycles)
Strength Retained, % 52.9

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 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.

(TUFF60A)
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