AGC CERAMICS CO., LTD.

Ramcrete (Vibratory casting)

April, 2011

Al_2O_3–SiO_2 Ramcrete

Product		WHITERAM-RE	GIBRAM-RE	HEXARAM-RE	KAORAM-RE	NORRAM-RE	ALCORAL-E	GIBRAM	ASAL-85Z
Raw materials		High purity alumina	High alumina	High alumina	High-quality chamotte	Chamotte	High purity alumina	High alumina	High alumina
Max service temperature (℃)		1750	1600	1600	1550	1500	1850	1600	1600
Installation requirement (t/m^3)		3.20	2.95	2.65	2.40	2.35	3.30	2.95	2.95
Water additions (wt%)		4～5	5～6	5～6	5.5～6.5	6.5～7.5	5～6	5～6	5～6
Chemical composition (%)	SiO_2	4.7	10	31	51	43	< 1.5	10	11
	Al_2O_3	93	84	64	45	52	95	84	83
	Cr_2O_3								
	ZrO_2								
Bulk density	110℃×24hrs.	3.20	2.95	2.65	2.40	2.35	3.30	2.95	2.95
	( )Temp× 3hrs.	3.25 (1600)	2.84 (1400)	2.56 (1400)	2.45 (1400)	2.37 (1400)	3.29 (1500)	2.84 (1400)	2.90 (1400)
Cold crushing strength (MPa) Bending strength (MPa)	110℃×24hrs.	98 (25)	80 (15)	60 (11)	60 (14)	50 (9)	70 (10)	80 (15)	90 (16)
	800℃× 3hrs.	108 (25)	83 (16)	65 (13)	70 (15)	55 (12)	80 (10)	83 (16)	95 (17)
	1000℃× 3hrs.								
	1400℃× 3hrs.	176 (42)	117 (23)	85 (20)	95 (23)	90 (16)	110 (25)	117 (23)	130 (25)
	1500℃× 3hrs.								
	1600℃× 3hrs.	215 (49)	176 (33)	95 (23)			180 (35)	176 (33)	
Permanent linear change (%)	110℃×24hrs.	0	0	0	0	0	0	0	0
	( )Temp.× 3hrs.	-0.3 (1600)	0.1 (1400)	0.3 (1400)	-0.3 (1400)	-0.2 (1400)	-0.1 (1600)	0.1 (1400)	0.1 (1400)
Porosity (%)	110℃×24hrs.	12	8	10	8	10	8	8	8
	800℃× 3hrs.	17	13	13	14	14	13	13	13
	1000℃× 3hrs.								
	1400℃× 3hrs.	15	16	15	16	14	16	16	16
	1500℃× 3hrs.								
	1600℃× 3hrs.	12	16	13			16	16	16
Thermal expansion (%) at1000℃		0.6	0.7	0.6	0.45	0.45	0.8	0.7	0.7
Bending strength at elevated temp. (MPa) at1260℃		7.8	19.6	14.7	9.8	7.8	11.7	19.6	
Thermal conductivity (W/mK)	at 500℃	3.7	3.1	2.4	1.9	1.6	3.8	3.1	3.1
	at 1000℃	3.6	2.8	2.7	2.2	1.8	3.7	2.8	2.8
Standard package quantity(kg)		25	25	25	25	25	25	25	25
Typical applications		Types of kilns	Types of kilns	Types of kilns	Incinerator Types of kilns	Types of kilns	Alumium melting furnace	Alumium melting furnace	Alumium melting furnace

Cr_2O_3 Ramcrete

Product		CHROMERAM -80ZC-RE	CHROMERAM -40ZC-RE	CHROMERAM -30ZC-RE	CHROMERAM -20LC-RE	CHROMERAM -15LCK-RE	CHROMERAM -10LC-RE	HEXARAM -10XK2-RE
Raw materials		Alumina-chromia	Alumina-chromia	Alumina-chromia	Alumina-chromia	Alumina-chromia	Alumina-chromia	Alumina-chromia
Max service temperature (℃)		1800	1800	1800	1950	1600	1950	1600
Installation requirement (t/m^3)		4.10	3.65	3.55	3.45	3.15	3.40	2.85
Water additions (wt%)		3.2～3.8	3.8～4.4	4～4.6	4～4.6	4～5	4～4.6	4.5～5.6
Chemical composition (%)	SiO_2	2	1	1	0.5	4.5	0.5	18
	Al_2O_3	13	54	64	77	78.5	86	69
	Cr_2O_3	80	40	30	20	15	10	10
	ZrO_2	4	2	2				
Bulk density	110℃×24hrs.	4.10	3.67	3.57	3.45	3.15	3.40	2.85
	( )Temp× 3hrs.	4.05 (1500)	3.61 (1500)	3.50 (1500)	3.35 (1500)	3.05 (1500)	3.33 (1500)	2.78 (1500)
Cold crushing strength (MPa) Bending strength (MPa)	110℃×24hrs.	70 (10)	75 (10)	70 (10)	70 (18)	70 (15)	65 (13)	65 (10)
	800℃× 3hrs.							
	1000℃× 3hrs.	70 (10)	120 (20)	120 (20)	80 (20)	95 (12)	95 (17)	120 (15)
	1400℃× 3hrs.							
	1500℃× 3hrs.	185 (20)	250 (35)	280 (35)	200 (40)	170 (20)	195 (35)	135 (15)
	1600℃× 3hrs.							
Permanent linear change (%)	110℃×24hrs.	0	0	0	0	0	0	0
	( )Temp.× 3hrs.	0.3 (1500)	0.1 (1500)	0.2 (1500)	0.4 (1500)	0.6 (1500)	0.3 (1500)	0.4 (1500)
Porosity (%)	110℃×24hrs.	10	10	11	7	12	13	14
	800℃× 3hrs.							
	1000℃× 3hrs.	16	16	16	16	17	16	17
	1400℃× 3hrs.							
	1500℃× 3hrs.	15	15	16	17	19	17	19
	1600℃× 3hrs.							
Thermal expansion (%) at1000℃		0.7	0.7	0.7	0.8	0.7	0.8	0.5
Bending strength at elevated temp. (MPa) at1260℃								
Thermal conductivity (W/mK)	at 500℃	3.7	3.4	3.4	3.8	3.8	3.8	2.7
	at 1000℃	3.3	3.0	2.5	4.6	4.6	4.6	2.9
Standard package quantity(kg)		25	25	25	25	25	25	25
Typical applications		Melting furnace (High corrosion resistance)	Melting furnace (High corrosion resistance)	Melting furnace	Melting furnace	Melting furnace	Melting furnace	Melting furnace

※The data shown here is a representative value, and no hallmark value.