

## Raw Materials for Tile & Ceramic industries

## مواد اولیه صنایع کاشی و سرامیک

Chemical Analysis								
Code	ACE	ARK-50	ASI-10	ASI-20	ASF-10	ASB-10	ASK	
Type	Ball clay		Illitic Clay		Feldspar	Bentonite	Kaoline	
SiO <sub>2</sub>	61 – 62	69	69 ± 1	67.5 ± 1.0	73 ± 1	66 ± 1	74 ± 1	
Al <sub>2</sub> O <sub>3</sub>	24 – 25	16-18	13.5 ± 0.5	14.5 ± 0.5	14.5 – 15	12.5 ± 0.5	14 ± 0.5	
Fe <sub>2</sub> O <sub>3</sub>	0.65 – 0.75	1.0-1.3	2.2 ± 0.1	2.6 ± 0.1	0.8 – 1.0	1.2 – 1.5	< 1%	
TiO <sub>2</sub>	1.2 – 1.3	<1.5	0.3 ± 0.02	0.35 ± 0.05	0.20 – 0.25	0.15 – 0.2	0.4	
Na <sub>2</sub> O	0.2 – 0.3	3.0-4.2	1.6 ± 0.2	1.8 ± 0.2	5.5 – 6.0	1 – 1.2	0.2 – 0.3	
K <sub>2</sub> O	0.4 – 0.5		4 ± 0.2	4.2 ± 0.2	1.0 – 1.4	0.2 – 0.6	1.3 – 1.5	
CaO	0.1 – 0.2	<0.8	2.4 ± 0.2	3.2 ± 0.2	0.5 – 0.8	3.5 – 4.5	0.4 – 0.6	
MgO	0.3 – 0.4	<0.8	0.9 ± 0.1	0.8 ± 0.1	1.2 – 1.4	2 – 2.3	0.4 – 0.6	
SO <sub>3</sub>	0.3 ± 0.05	< 1	0.25 ± 0.05	0.2 – 0.3	0.1 – 0.2	1 – 2	0.2 – 0.3	
L.O.I	10 ± 0.5	6 - 7	5 – 5.5	5.5 ± 0.5	2.0 – 2.4	10 - 12	4.7 – 5.0	
Physical & Thermal Properties at		1175°C/ 60'	1178°C/ 45'	1168°C/ 49'	1168°C/ 49'	1177°C/ 67'	1170°C/ 49'	1175°C/ 60'
Strength (kg/cm <sup>2</sup> )	Green	10 – 12	8 – 10	9 ± 2	8 ± 1	5 ± 1	13 ± 1	4 ± 1
	Dried	19 – 24	22 - 28	40 ± 2	34 ± 2	20 ± 2	37 ± 2	10 ± 2
	Fired	190 – 220	400 - 500	> 300	> 250	> 600	> 200	> 100
Fired Shrinkage		1.5 – 1.7	5-6	6 ± 1	5 ± 1	11 ± 1	6 ± 1	< 0.2
% Water Absorption		11 – 12.5	6-8	3 ± 0.5	7 ± 1	< 0.1	5 ± 1	16 ± 2
Coefficient of thermal Expansion at 500°C (α × 10 <sup>-7</sup> °C <sup>-1</sup> )		67	91	92	85	86	77	88
Color		L= 87 ± 1 a = 1.8 ± 0.1 b = 8.5 ± 0.5	L= 77.72 a = 4.21 b = 11.10	L= 47 ± 2 a = 11 ± 1 b = 16 ± 2	L= 47 ± 2 a = 14 ± 1 b = 18 ± 1	L= 57 ± 2 a = 4 ± 0.5 b = 12 ± 1	L= 68 ± 2 a = 5 ± 1 b = 15 ± 1	L= 84 ± 2 a = 4 ± 0.5 b = 6 ± 1
Plasticity		27-30						
Application		Engobe	Porcelain Bodies, Sanitary Ware	Wall, Floor, Porcelain tiles	Wall, Floor, Porcelain tiles	Floor & Porcelain tiles, Ceramics	Tiles, Ceramic	Wall & Floor tiles
Sizing		Briquette	< 40 mm < 10 mm	<15 mm	< 250 mm <15 mm	< 10 mm	< 200 mm	<200 cm < 10 mm
Packing		Big bag	Big bag – Bulk	Bulk	Bulk	Bulk	Bulk	Bulk
Delivery Place		Tabas Robot e Khan	Tabas Robot e Khan	Qazvin Boin Zahra	Qazvin Boin Zahra	Qazvin Boin Zahra	Qazvin Boin Zahra	Qazvin Boin Zahra

\*Samples are tested under company laboratory condition.