

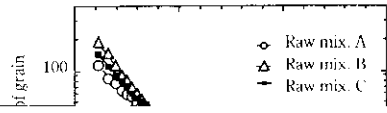
Analysis of Sintering Behavior for Improved Sintering Performance

Synopsis:

TECHNICAL REPORT NO. 38, APRIL 1998

Tabela 1. Chemical composition of raw materials

Material	CaO (%)	MgO (%)	SiO ₂ (%)	Al ₂ O ₃ (%)	Fe ₂ O ₃ (%)	MnO (%)	P ₂ O ₅ (%)	S (%)	Cl (%)	Na ₂ O (%)	K ₂ O (%)	Total (%)
1	50.0	10.0	20.0	10.0	5.0	2.0	1.0	0.5	0.2	0.1	0.1	100.0
2	45.0	12.0	22.0	11.0	6.0	2.5	1.5	0.8	0.3	0.2	0.2	100.0
3	40.0	15.0	25.0	12.0	7.0	3.0	2.0	1.0	0.4	0.3	0.3	100.0
4	35.0	18.0	28.0	13.0	8.0	3.5	2.5	1.2	0.5	0.4	0.4	100.0
5	30.0	20.0	30.0	14.0	9.0	4.0	3.0	1.5	0.6	0.5	0.5	100.0
6	25.0	22.0	32.0	15.0	10.0	4.5	3.5	1.8	0.7	0.6	0.6	100.0
7	20.0	24.0	34.0	16.0	11.0	5.0	4.0	2.0	0.8	0.7	0.7	100.0
8	15.0	26.0	36.0	17.0	12.0	5.5	4.5	2.2	0.9	0.8	0.8	100.0
9	10.0	28.0	38.0	18.0	13.0	6.0	5.0	2.5	1.0	0.9	0.9	100.0
10	5.0	30.0	40.0	19.0	14.0	6.5	5.5	2.8	1.1	1.0	1.0	100.0



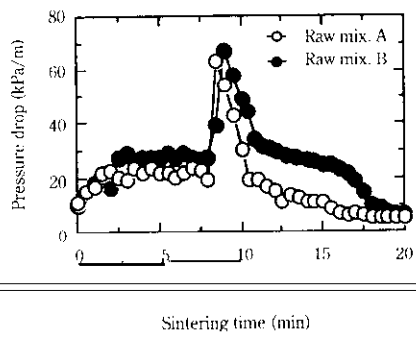


Fig. 7 Changes of pressure drop in sintering bed with blending of pisolitic ore during sintering process

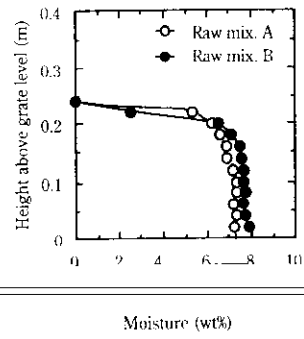
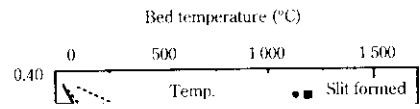


Fig. 8 Moisture condensation in sintering bed with blending of pisolitic ore

The plot of the cumulative value of the average grain diameter and index of melt fluidity falls on the same



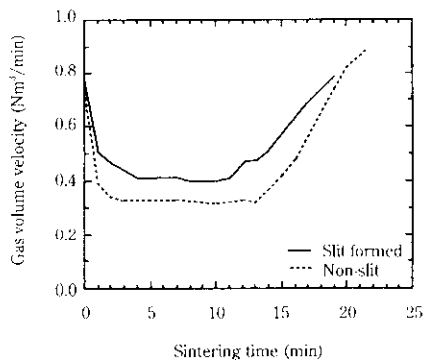


Fig. 10 Change of gas volume velocity during sintering

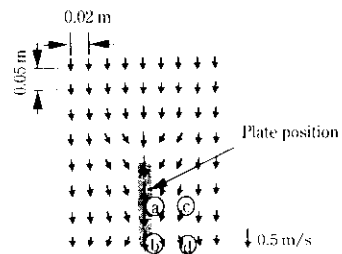
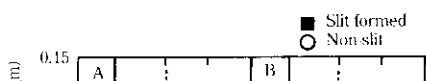


Fig. 12 Calculated velocity pattern of gas flow in the slit formed bed

Here, the following calculation was made assuming that the gas viscosity, μ , is 1.8×10^{-5} Pa·s, the raw material particle diameter is 0.002 m, and the gas density, ρ_g , is 1.3 kg/m^3 .

In the results of the test with the small-scale pot, the

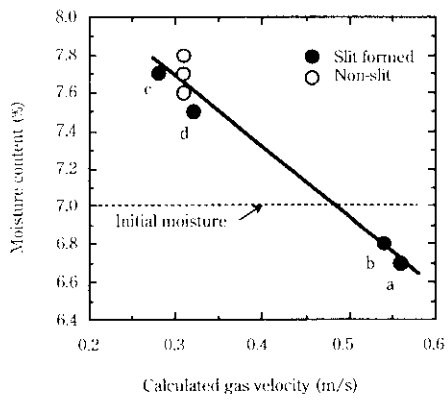
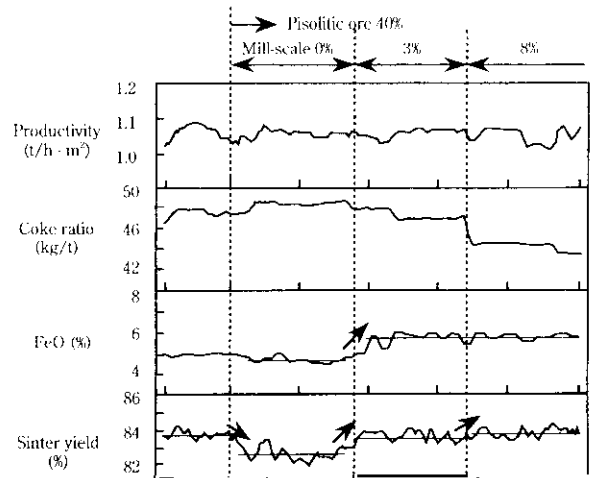
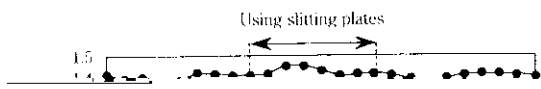


Fig. 13 Relationship between calculated gas velocity and moisture content





in an increase in the gas flow resistance of the sintering bed, which deteriorates permeability.