

Effects of Bio-coal Briquette for Residential Combustion on Brown Carbon Emission Reduction

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Table S1: The results of orthogonal experiment of bio-coal briquette mixed with rice straw.

Factor No.	Biomass/anthracite (kg/kg)	Particle size (mm)	Molding pressure (MPa)	Shatter strength (%)	Compressive strength (kN)
1	1:9	1	15	97.90	11.32
2	1:9	2	25	99.13	13.00
3	1:9	3	35	99.02	13.73
4	1:4	1	25	99.75	18.77
5	1:4	2	35	98.74	18.55
6	1:4	3	15	98.11	21.88
7	3:7	1	35	18.29	12.01
8	3:7	2	15	79.27	15.88
9	3:7	3	25	96.47	8.25

Table S2: The results of orthogonal experiment of bio-coal briquette mixed with corn straw.

Factor No.	Biomass/anthracite (kg/kg)	Particle size (mm)	Molding pressure (MPa)	Shatter strength (%)	Compressive strength (kN)
1	1:9	1	15	99.74	12.17
2	1:9	2	25	95.23	14.18
3	1:9	3	35	99.44	16.41
4	1:4	1	25	99.72	24.55
5	1:4	2	35	98.47	19.65
6	1:4	3	15	87.72	11.12
7	3:7	1	35	96.32	13.01
8	3:7	2	15	66.65	13.45
9	3:7	3	25	84.12	12.69

Table S3: The shatter strength analysis of rice straw-coal briquette.

Index		A	B	C
Shatter strength	K1	296.05	215.94	275.28
	K2	296.60	277.14	295.35
	K3	194.03	293.60	216.05
	k1	98.68	71.98	91.76
	k2	98.87	92.38	98.45
	k3	64.68	97.87	72.02
	R	34.19	25.89	26.43
	Factor ranking	ACB		
	Excellent combination	A2C2B3		

Table S4: The compressive strength analysis of rice straw-coal briquette.

Index		A	B	C
Compressive strength	K1	38.05	42.10	49.07
	K2	59.20	47.43	40.02
	K3	36.14	43.86	44.29
	k1	12.68	14.03	16.36
	k2	19.73	15.81	13.34
	k3	12.05	14.62	14.76
	R	7.69	1.78	3.02
	factor ranking	ACB		
	Excellent combination	A2C1B2		

Table S5: The shatter strength analysis of corn straw-coal briquette.

Index		A	B	C
Shatter strength	K1	294.41	295.78	254.11
	K2	285.91	260.35	279.07
	K3	247.09	271.28	294.23
	k1	98.14	98.59	84.70
	k2	95.30	86.78	93.02
	k3	82.36	90.43	98.08
	R	15.78	11.81	13.38
	Factor ranking	ACB		
	Excellent combination	A1C3B1		

Table S6: The compressive strength analysis of corn straw -coal briquette.

Index		A	B	C
Compressive strength	K1	42.76	49.73	36.74
	K2	55.32	47.28	51.42
	K3	39.15	40.22	49.07
	k1	14.25	16.58	12.25
	k2	18.44	15.76	17.14
	k3	13.05	13.41	16.36
	R	5.39	3.17	4.89
	Factor ranking	ACB		
	Excellent combination	A2C2 B1		