

Supplementary Table S1. The numbers of coal samples collected from 9 minable coal seams in 24 boreholes in Huainan Coalfield, Anhui, China

| Borehole Nos. | Coal seam Nos. | | | | | | | | | Total |
|---------------|----------------|----|-----|-----|-----|-----|----|------|------|-------|
| | 1 | 3 | 4-1 | 4-2 | 5-1 | 7-2 | 8 | 11-2 | 13-1 | |
| DJ1917 | 3 | 0 | 3 | 3 | 0 | 3 | 1 | 3 | 3 | 19 |
| DJ21-38 | 0 | 3 | 0 | 3 | 3 | 0 | 0 | 3 | 3 | 18 |
| DJ21-39 | 3 | 0 | 3 | 0 | 0 | 3 | 0 | 3 | 3 | 15 |
| DJ21-40 | 1 | 0 | 0 | 0 | 3 | 2 | 3 | 3 | 0 | 12 |
| DJ22-13 | 0 | 0 | 3 | 3 | 0 | 3 | 0 | 0 | 3 | 12 |
| DJ22-14 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 0 | 23 |
| DJ23-24-1 | 0 | 3 | 3 | 3 | 3 | 0 | 3 | 2 | 3 | 20 |
| DJ24-41 | 0 | 3 | 3 | 0 | 0 | 3 | 3 | 3 | 3 | 18 |
| DJ24-25-1 | 3 | 0 | 3 | 3 | 0 | 0 | 3 | 1 | 3 | 16 |
| DJB KZ1 | 1 | 3 | 3 | 2 | 1 | 3 | 2 | 0 | 3 | 18 |
| DJB KZ2 | 2 | 3 | 2 | 3 | 1 | 1 | 3 | 3 | 3 | 21 |
| DJB KZ1 | 3 | 3 | 2 | 3 | 3 | 0 | 3 | 3 | 0 | 20 |
| DJB KZ2 | 1 | 3 | 2 | 0 | 2 | 3 | 3 | 0 | 3 | 17 |
| DJB KZ1 | 0 | 0 | 0 | 3 | 2 | 0 | 3 | 3 | 3 | 14 |
| DJB KZ2 | 3 | 0 | 3 | 1 | 3 | 3 | 3 | 3 | 0 | 19 |
| DJB KZ1 | 0 | 3 | 0 | 3 | 3 | 0 | 3 | 3 | 3 | 18 |
| DJ KZ1 | 1 | 1 | 1 | 0 | 1 | 2 | 1 | 1 | 3 | 11 |
| DJ15KZ1 | 0 | 3 | 0 | 3 | 3 | 0 | 3 | 7 | 7 | 26 |
| DJ16KZ1 | 0 | 3 | 0 | 3 | 1 | 2 | 0 | 3 | 0 | 12 |
| DJ16KZ2 | 3 | 0 | 3 | 0 | 3 | 3 | 3 | 0 | 3 | 18 |
| DJ22KZ1 | 3 | 3 | 0 | 3 | 3 | 3 | 0 | 3 | 2 | 20 |
| DJ22KZ2 | 3 | 0 | 3 | 0 | 0 | 3 | 3 | 1 | 3 | 16 |
| DJ24KZ1 | 0 | 3 | 3 | 0 | 3 | 0 | 3 | 3 | 3 | 15 |
| DJ26KZ1 | 3 | 3 | 0 | 3 | 3 | 3 | 0 | 3 | 0 | 18 |
| Total | 36 | 43 | 43 | 45 | 44 | 43 | 49 | 56 | 57 | 416 |

Note: “DJ1917” refers to the borehole number in the coal mine, and the same reference to the first column;

“1,3,4-1,4-2,5-1,7-2,8,11-2,and 13-1” refers to the coal seam numbers;

“Total” in the last column refers to the total number of samples in each borehole and in the last row refers to the total number of samples in each coal seam, and the last number “416” refers to the total number of studied samples.