Material ratio of model test

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| lithology | Total thickness /cm | Delamination thickness /cm | Number of layers | Total weight of layers /kg | Amount of laminating material/kg | Bulk density /kN/m3 |
| sand | calcium carbonate | Gypsum | Water |
| Loose layer | 20 | 20 | 1 | 97.462 | 96.026 | 0.235 | 0.201 | 10 | 11 |
| Horizontal mudstone | 10 | 1 | 10 | 4.594 | 4.081 | 0.359 | 0.154 | 0.418 | 14.7 |
| Horizontal sandstone | 10 | 1 | 10 | 4.898 | 4.354 | 0.272 | 0.272 | 0.447 | 16.1 |
| Coal 1 | 4 | 2 | 2 | 11.17 | 9.93 | 0.87 | 0.37 | 1.02 | 13.23 |
| Coal 2 | 6 | 3 | 2 | 11.17 | 9.93 | 0.87 | 0.37 | 1.02 | 13.23 |
| Inclined mudstone | 92 | 1 | 92 | 1.589 | 1.412 | 0.124 | 0.053 | 0.144 | 14.7 |
| Inclined sandstone | 84 | 1 | 84 | 1.694 | 1.506 | 0.094 | 0.094 | 0.155 | 16.1 |

Uniaxial compression test results

|  |  |  |
| --- | --- | --- |
| Number | Uniaxial compression /kPa | Average value /kPa |
| 1 | 31.5 | 30.1 |
| 2 | 28.4 |
| 3 | 30.5 |

Surface crack information

|  |  |  |  |
| --- | --- | --- | --- |
| Crack number | Dip angle /° | Inclination /° | Extension length/cm |
| 1 | 90 | 90 | 7.4 |
| 2 | 90 | 90 | 15.1 |
| 3 | 65 | 90 | 10.2 |
| 4 | 48 | 90 | 4.2 |
| 5 | 62 | 270 | 6.7 |
| 6 | 65 | 270 | 7.2 |
| 7 | 79 | 270 | 10.4 |
| 8 | 80 | 90 | 10.6 |
| 9 | 82 | 270 | 10.6 |
| 10 | 83 | 270 | 66.3 |
| 11 | 85 | 270 | 15.8 |
| 12 | 89 | 90 | 8.3 |
| 13 | 90 | 90 | 8.5 |