

WEST CUMBRIA MINING HIGH VOLATILE HARD COKING COAL INDICATIVE SPECIFICATION (Main Band) 2019 ISO STANDARDS

| PROXIMATE ANALYSIS [air dried] | |
|--------------------------------|-------|
| Inherent Moisture | 2.5% |
| Ash | <4% |
| Volatile Matter | 32.0% |
| Fixed Carbon | >61% |

| S, P & HGI | |
|------------------------------|---------|
| Total Sulphur [air dried] | <1.4% |
| Phosphorus [in coal] | <0.005% |
| Hardgrove Grindability Index | 61 |

| COKING PROPERTIES | |
|--------------------------|-------------|
| Ave. Free Swelling Index | 8.1 |
| Gieseler Fluidity | |
| Initial Softening Temp | 407°C |
| Max Fluidity Temp | 441°C |
| Solidification Temp | 471°C |
| Plastic Range | 64°C |
| Max Fluidity | 30,000 ddpm |
| Audibert Arnu Dilatation | |
| Initial Softening Temp | 362°C |
| Max Contraction Temp | 399°C |
| Max Dilatation Temp | 460°C |
| Max Contraction | 24% |
| Max Dilatation | 202% |

| PETROGRAPHY | |
|--------------------------------|-------|
| Mean Max Vitrinite Reflectance | 1.02% |
| Vitrinite | 72% |

| ASH ANALYSIS [dry basis] | |
|--------------------------------|--------|
| SiO ₂ | 36.15% |
| Al ₂ O ₃ | 29.44% |
| Fe ₂ O ₃ | 17.18% |
| CaO | 6.52% |
| MgO | 1.04% |
| Na ₂ O | 1.14% |
| K ₂ O | 0.56% |
| TiO ₂ | 0.87% |
| Mn ₃ O ₄ | 0.28% |
| SO ₃ | 5.38% |
| P ₂ O ₅ | 0.35% |