

Českomoravský cement, a.s.  
Mokrá 359  
664 04 Mokrá-Horákov

**Statistické hodnocení kvality cementu**  
dle EN 197-1

**Cement: CEM II/B-M (V-LL) 32,5 R**

Období: Od: **01.10.2022**

Závod: **Mokrá**

Do: **31.10.2022**

**Mechanické a fyzikální vlastnosti**

| Datum         | Měrný povrch           | Normální konzistence | Počátek tuhnutí | Konec tuhnutí | Objemová stálost | Pevnost v tlaku |             | Pevnost v ohybu |            |
|---------------|------------------------|----------------------|-----------------|---------------|------------------|-----------------|-------------|-----------------|------------|
|               |                        |                      |                 |               |                  | 2 dny           | 28 dní      | 2 dny           | 28 dní     |
| Jednotka      | [ m <sup>2</sup> /kg ] | [ % ]                | [ min ]         | [ min ]       | [ mm ]           | [ MPa ]         | [ MPa ]     | [ MPa ]         | [ MPa ]    |
| 03.10.2022    | 491                    | 31,4                 | 259             | 346           | 1,0              | 20,3            | 45,2        | 4,1             | 7,8        |
| 04.10.2022    | 490                    | 31,0                 | 277             | 365           | 1,5              | 19,1            | 43,3        | 3,6             | 7,4        |
| 05.10.2022    | 493                    | 32,0                 | 265             | 351           | 1,0              | 19,4            | 43,8        | 3,8             | 7,9        |
| 06.10.2022    | 506                    | 31,8                 | 265             | 365           | 1,0              | 19,6            | 43,8        | 3,9             | 7,5        |
| 10.10.2022    | 495                    | 31,4                 | 264             | 397           | 0,5              | 19,5            | 45,1        | 4,2             | 7,9        |
| 11.10.2022    | 501                    | 30,6                 | 232             | 322           | 0,5              | 20,5            | 43,5        | 3,7             | 7,3        |
| 12.10.2022    | 494                    | 30,4                 | 233             | 337           | 1,0              | 20,7            | 43,3        | 4,3             | 7,9        |
| 13.10.2022    | 492                    | 30,8                 | 257             | 360           | 1,0              | 18,7            | 44,2        | 3,8             | 7,3        |
| 17.10.2022    | 502                    | 31,0                 | 265             | 358           | 1,5              | 19,5            | 44,0        | 3,9             | 7,7        |
| 18.10.2022    | 501                    | 31,0                 | 244             | 354           | 1,0              | 19,0            | 44,4        | 4,1             | 8,1        |
| 20.10.2022    | 485                    | 30,8                 | 265             | 359           | 1,0              | 18,8            | 42,5        | 4,1             | 8,4        |
| 21.10.2022    | 509                    | 30,4                 | 265             | 359           | 1,0              | 19,4            | 43,6        | 4,0             | 7,5        |
| 24.10.2022    | 501                    | 31,2                 | 269             | 346           | 1,5              | 19,1            | 42,4        | 3,9             | 7,8        |
| 25.10.2022    | 481                    | 31,2                 | 274             | 356           | 1,5              | 20,9            | 48,3        | 4,3             | 8,3        |
| 26.10.2022    | 479                    | 31,4                 | 267             | 354           | 1,0              | 21,1            | 45,7        | 4,4             | 8,0        |
| 27.10.2022    | 481                    | 30,6                 | 231             | 354           | 1,5              | 20,7            | 45,0        | 4,4             | 8,0        |
| 27.10.2022    | 482                    | 30,4                 | 274             | 346           | 1,5              | 19,5            | 45,2        | 4,0             | 7,8        |
| ---           | ---                    | ---                  | ---             | ---           | ---              | ---             | ---         | ---             | ---        |
| ---           | ---                    | ---                  | ---             | ---           | ---              | ---             | ---         | ---             | ---        |
| ---           | ---                    | ---                  | ---             | ---           | ---              | ---             | ---         | ---             | ---        |
| <b>Průměr</b> | <b>493</b>             | <b>31,0</b>          | <b>259</b>      | <b>355</b>    | <b>1,1</b>       | <b>19,8</b>     | <b>44,3</b> | <b>4,0</b>      | <b>7,8</b> |
| Max           | 509                    | 32,0                 | 277             | 397           | 1,5              | 21,1            | 48,3        | 4,4             | 8,4        |
| Min           | 479                    | 30,4                 | 231             | 322           | 0,5              | 18,7            | 42,4        | 3,6             | 7,3        |
| Std           | 9                      | 0,5                  | 14              | 15            | 0,3              | 0,8             | 1,4         | 0,2             | 0,3        |
| Četnost       | 17                     | 17                   | 17              | 17            | 17               | 17              | 17          | 17              | 17         |
| Norma-min     |                        |                      | 75              |               |                  | 10,0            | 32,5        |                 |            |
| Norma-max     |                        |                      |                 |               | 10               |                 | 52,5        |                 |            |

V Mokré dne : 08.12.2022

Ing. Vojtěch Smutný - vedoucí útvaru řízení jakosti

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Závod Mokrá  
IČ: 262 09 578  
DIČ: CZ26209578

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**Chemické vlastnosti**

| Datum         | SiO <sub>2</sub> | Al <sub>2</sub> O <sub>3</sub> | Fe <sub>2</sub> O <sub>3</sub> | CaO          | MgO         | K <sub>2</sub> O | Na <sub>2</sub> O | Obsah síranů<br>(jako SO <sub>3</sub> ) | Na <sub>2</sub> O ekv. | Obsah Cl     | Ztráta ziháním | Nerozpuštěný<br>zbytek | Vodorozpuštěný<br>chrom (Cr <sup>6+</sup> ) | C <sub>3</sub> A ve slině |
|---------------|------------------|--------------------------------|--------------------------------|--------------|-------------|------------------|-------------------|---|------------------------|--------------|----------------|------------------------|---|---------------------------|
| Jednotka      | [ % ]            | [ % ]                          | [ % ]                          | [ % ]        | [ % ]       | [ % ]            | [ % ]             | [ % ]                                   | [ % ]                  | [ % ]        | [ % ]          | [ % ]                  | [ ppm ]                                     | [ % ]                     |
| 03.10.2022    | 20,84            | 7,70                           | 3,23                           | 50,00        | 1,20        | 0,83             | 0,10              | 2,31                                    | 0,65                   | 0,057        | ---            | ---                    | ---   | 7,62                      |
| 04.10.2022    | 21,10            | 7,53                           | 3,12                           | 50,01        | 1,35        | 0,79             | 0,11              | 2,36                                    | 0,63                   | 0,063        | ---            | ---                    | 0,00  | 7,62                      |
| 05.10.2022    | 20,41            | 7,63                           | 3,14                           | 50,15        | 1,14        | 0,80             | 0,12              | 2,33                                    | 0,65                   | 0,048        | ---            | ---                    | ---   | 6,86                      |
| 06.10.2022    | 20,40            | 7,69                           | 3,14                           | 50,16        | 1,13        | 0,81             | 0,12              | 2,33                                    | 0,65                   | 0,052        | ---            | ---                    | ---   | 7,62                      |
| 10.10.2022    | 20,53            | 7,50                           | 3,12                           | 50,10        | 1,18        | 0,82             | 0,11              | 2,31                                    | 0,65                   | 0,050        | ---            | ---                    | ---   | 7,62                      |
| 11.10.2022    | 20,56            | 7,44                           | 3,16                           | 49,84        | 1,18        | 0,78             | 0,10              | 2,29                                    | 0,61                   | 0,051        | ---            | ---                    | ---   | 6,86                      |
| 12.10.2022    | 20,24            | 7,08                           | 3,13                           | 52,13        | 1,16        | 0,84             | 0,12              | 2,65                                    | 0,67                   | 0,057        | ---            | ---                    | 0,00  | 6,86                      |
| 13.10.2022    | 20,41            | 7,31                           | 3,12                           | 50,52        | 1,23        | 0,81             | 0,11              | 2,47                                    | 0,64                   | 0,048        | ---            | ---                    | ---   | 6,86                      |
| 17.10.2022    | 20,18            | 7,12                           | 3,13                           | 51,52        | 1,14        | 0,83             | 0,11              | 2,52                                    | 0,66                   | 0,057        | ---            | ---                    | ---   | 6,72                      |
| 18.10.2022    | 20,66            | 7,50                           | 3,13                           | 50,34        | 1,17        | 0,83             | 0,12              | 2,28                                    | 0,67                   | 0,068        | ---            | ---                    | 0,00  | 6,72                      |
| 20.10.2022    | 20,49            | 7,39                           | 3,18                           | 50,11        | 1,17        | 0,78             | 0,10              | 2,28                                    | 0,61                   | 0,051        | ---            | ---                    | ---   | 6,72                      |
| 21.10.2022    | 20,27            | 7,25                           | 3,12                           | 51,47        | 1,19        | 0,84             | 0,11              | 2,53                                    | 0,66                   | 0,060        | ---            | ---                    | ---   | 6,72                      |
| 24.10.2022    | 20,69            | 7,62                           | 3,15                           | 50,53        | 1,18        | 0,81             | 0,12              | 2,40                                    | 0,65                   | 0,053        | ---            | ---                    | ---   | 6,72                      |
| 25.10.2022    | 20,87            | 7,34                           | 3,14                           | 51,66        | 1,27        | 0,82             | 0,11              | 2,45                                    | 0,65                   | 0,056        | ---            | ---                    | 0,00  | 6,72                      |
| 26.10.2022    | 20,87            | 7,31                           | 3,15                           | 51,74        | 1,27        | 0,82             | 0,11              | 2,45                                    | 0,65                   | 0,056        | ---            | ---                    | ---   | 6,72                      |
| 27.10.2022    | 20,86            | 7,35                           | 3,15                           | 51,71        | 1,28        | 0,82             | 0,11              | 2,45                                    | 0,65                   | 0,056        | ---            | ---                    | ---   | 6,72                      |
| 27.10.2022    | 20,81            | 7,47                           | 3,16                           | 50,98        | 1,32        | 0,80             | 0,16              | 2,36                                    | 0,69                   | 0,065        | ---            | ---                    | ---   | 6,72                      |
| ---           | ---              | ---                            | ---                            | ---          | ---         | ---              | ---               | ---                                     | ---                    | ---          | ---            | ---                    | ---   | ---                       |
| ---           | ---              | ---                            | ---                            | ---          | ---         | ---              | ---               | ---                                     | ---                    | ---          | ---            | ---                    | ---   | ---                       |
| ---           | ---              | ---                            | ---                            | ---          | ---         | ---              | ---               | ---                                     | ---                    | ---          | ---            | ---                    | ---   | ---                       |
| <b>Průměr</b> | <b>20,60</b>     | <b>7,43</b>                    | <b>3,15</b>                    | <b>50,76</b> | <b>1,21</b> | <b>0,81</b>      | <b>0,11</b>       | <b>2,40</b>                             | <b>0,65</b>            | <b>0,056</b> | ---            | ---                    | ---   | <b>6,96</b>               |
| Max           | 21,10            | 7,70                           | 3,23                           | 52,13        | 1,35        | 0,84             | 0,16              | 2,65                                    | 0,69                   | 0,068        | ---            | ---                    | 0,000                                       | 7,62                      |
| Min           | 20,18            | 7,08                           | 3,12                           | 49,84        | 1,13        | 0,78             | 0,10              | 2,28                                    | 0,61                   | 0,048        | ---            | ---                    | 0,000                                       | 6,72                      |
| Std           | 0,26             | 0,18                           | 0,03                           | 0,75         | 0,06        | 0,02             | 0,01              | 0,10                                    | 0,02                   | 0,006        | ---            | ---                    | 0,000                                       | 0,37                      |
| Četnost       | 17               | 17                             | 17                             | 17           | 17          | 17               | 17                | 17                                      | 17                     | 17           | 0              | 0                      | 4   | 17                        |
| Norma-min     |                  |                                |                                |              |             |                  |                   |   |                        |              |                |                        |   |                           |
| Norma-max     |                  |                                |                                |              |             |                  |                   | 3,5                                     |                        | 0,10         |                |                        |   |                           |

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