

Lafarge Cement S.A.  
ul. Warszawska 110  
28-366 Małogoszcz  
Cementownia Kujawy  
Doradztwo Techniczne  
www.lafarge.pl

tel.: (52) 58 65 000, fax: (52) 58 65 011  
tel.: (41) 24 87 533, fax: (41) 24 87 531

KUJAWY CEMENT  
PLANT IN BIELAWY

## Quality Certificate of cement

Type of cement : **CEM I 42,5R**

Requirements acc. to: EN 197-1:2011

Values obtained for the period of: **September 2022**

|  | Unit | Results | Requirements acc. to:<br>EN 197-1:2011 |
|--|------|---------|----------------------------------------|
|--|------|---------|----------------------------------------|

### 1.Properties (by standards)

|                                                                                  |     |       |                           |
|----------------------------------------------------------------------------------|-----|-------|---------------------------|
| Compressive strength                                                             |     |       |                           |
| Early strength, after 2 days                                                     | MPa | 27,8  | $\geq 20$                 |
| Standard strength, after 28 days<br><small>(results from previous month)</small> | MPa | 58,1  | $\geq 42,5$ i $\leq 62,5$ |
| Initial setting time                                                             | min | 180   | $\geq 60$                 |
| Expansion of cement                                                              | mm  | 1,0   | $\leq 10$                 |
| Sulfate content (as SO <sub>3</sub> )                                            | %   | 3,24  | $\leq 4,0$                |
| Chloride content Cl <sup>-</sup>                                                 | %   | 0,081 | $\leq 0,10$               |
| Loss on ignition <sup>a)</sup>                                                   | %   | 3,07  | $\leq 5,0$                |
| Insoluble residues <sup>a)</sup>                                                 | %   | 1,09  | $\leq 5,0$                |

### 2. Additional information

|                                                        |   |       |   |
|--------------------------------------------------------|---|-------|---|
| Laser particle size distribution<br>passing 8 µm/32 µm | % | 31/73 | - |
|--------------------------------------------------------|---|-------|---|

a)only for CEM I and CEM III

*Anna Kozłowska*

Kierownik Jakości  
*Kozłowska*  
Cementownia Kujawy w Bielawach

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stamp/signature