

# Test certificate for cement according to DIN EN 197-1

# HEIDELBERGCEMENT

## HeidelbergCement AG

Zementwerk Ennigerloh Nord  
Zur Anneliese 9  
59320 Ennigerloh  
Germany  
Telefon +49 2524 29 - 0  
Telefax +49 2524 29 - 51218

cement type: **Portland cement CEM I 52,5 R**

Date of issue: **31<sup>st</sup> March 2020**

**Milke premium**

Period of analysis: **01.01.2019 to 31.12.2019**

Origin or manufacturer: **HeidelbergCement AG, plant Milke Geseke**

### Chemical and mineral compositions:

Loss on ignition	1.1	%
Insoluble residue	[0.6]	%
SiO <sub>2</sub>	22.5	%
Al <sub>2</sub> O <sub>3</sub>	3.9	%
TiO <sub>2</sub>	0.2	%
Mn <sub>2</sub> O <sub>3</sub>	0.1	%
P <sub>2</sub> O <sub>5</sub>	0.1	%
Fe <sub>2</sub> O <sub>3</sub>	1.4	%
CaO	66.0	%
MgO	0.8	%
SO <sub>3</sub>	3.4	%
S		%
K <sub>2</sub> O	0.7	%
Na <sub>2</sub> O	0.2	%
PbO		%
ZnO	0.0	%
Cl	< 0.1	%
Remainder	0.0	%
<b>Total</b>	<b>100.4</b>	<b>%</b>

Ca-M	2.3	
Si-M	4.3	
T-M	2.8	
P1		
P2		
P3		
F-III		
Lime standard	92.9	
free CaO	0.4	%
C <sub>3</sub> S	60.0	%
C <sub>2</sub> S	19.3	%
C <sub>3</sub> A	7.9	%
C <sub>4</sub> AF	4.3	%
C <sub>2</sub> F		%
Na <sub>2</sub> O-equivalent	0.7	%

H <sub>2</sub> O		%
Hydrate water		%
CaSO <sub>4</sub> * 2H <sub>2</sub> O		%
CaSO <sub>4</sub>		%
CaCO <sub>3</sub>		%
CO <sub>2</sub>		%
Brightness	40.0	
Fineness		cm <sup>2</sup> /g
heat of hydration		J/g
Slag/trass/fly-ash/limestone		%
Bulk density		kg/dm <sup>3</sup>

### Remark:

Low chromate according to Directive 2003/53/EC

Our cement meets the requirement of DIN EN 197-1.

The values listed here are only individual results of our own monitoring in the past.

We would like to point out that the stated values do not represent any quality guarantees.

i.v. 

Leiter Qualität Ennigerloh/Geseke/Paderborn

**ECHT. STARK. GRÜN.**

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Grinding fineness					
Grinding fineness residue 200 µm	%	0.0	Blaine value	cm <sup>2</sup> /g	5,250
Grinding fineness residue 90 µm	%	0.0			

Setting			Volume stability		
Water requirement (NST)	%	31.6	cook attempt		
Start of setting	min	165	Le Chatelier	mm	0.4
End of setting	min	210			

Chemical analysis					
Loss of ignition	%	1.1	SO <sub>3</sub>	%	3.4
Insoluble residue	%	[0.6]	Slag/trass/fly-ash/limestone	%	

Compressive strengths					
after 1 day		27.6			
after 2 days	MPa	44.6	after 28 days	MPa	76.3

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