HEIDELBERGCEMENT
- Zentrallabor Ennigerloh -

Test certificate

Type and designation of the material:	**Portland cement CEM I 42,5 N** **Milke®basic**

Origin or manufacturer:	**HeidelbergCement AG, Zementwerk Milke / Geseke** **59590 Geseke**

Period of analysis:	**yearly average 2010**

Binder test according to DIN 1164/EN 196/EN 197/EN 413/EN 459 and according to internal test instructions:

Grinding fineness residue 630 µm		**%**
Grinding fineness residue 200 µm	**0,0**	**%**
Grinding fineness residue 90 µm	**2,3**	**%**
Grinding fineness residue 63 µm		**%**
Fineness	**3180**	**cm^2/g**
Spec. gravity		**g/cm^3**
Bulk density		**kg/dm^3**
Water requirement (NST)	**26,2**	**%**
Start of setting	**195**	**Min.**
End of setting	**240**	**Min.**
False setting - w/b		**cm**
Water for mortar		**%**
Slump		**mm**

Loss on ignition	**2,1**	**%**
insoluble residue	**0,8**	**%**
SiO_2	**23,4**	**%**
Al_2O_3	**3,9**	**%**
Fe_2O_3	**1,4**	**%**
CaO	**65,0**	**%**
MgO	**0,8**	**%**
SO_3	**2,7**	**%**
K_2O	**0,7**	**%**
Na_2O	**0,2**	**%**
Cl	**< 0,1**	**%**
Brightness	**37,5**	**%**

Strengths:

Flexural tensile strengths in MPa after					
		2 days			**28 days**
		5,3			**9,2**

Compressive strengths in MPa after					
		2 days			**28 days**
		25,0			**59,2**

Remark:

The above-mentioned values are mean values, which are subject to the usual production fluctuations.

4th of March, 2011

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