



Technical list of Portland cement CEM I 42,5 R (na)

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1 BUZZI Cement Hranice



CEM I 42,5 R (na) Portland cement CEM I 42,5 R (na)

Description:

CEM I 42,5 R (na) Portland cement is produced in accordance with ČSN EN 197-1 ed. 2. It is a hydraulic binder in powder form with reduced content of $\text{Na}_2\text{O}_{\text{ekv}}$. produced by grinding together Portland clinker, calcium sulphate, additional constituents and additives. These constituents are specified technical standards EN 197-1, article 5.

Characteristic features:

- rapid strength development
- high early strength
- high standard strength
- higher development of hydration heat in the process of setting and hardening
- lower content of $\text{Na}_2\text{O}_{\text{ekv}}$ alkalis in comparison with CEM I 42,5 R

Composition of the Portland cement

Type of cement	Main constituent	Additional constituent
	Portland clinker	
CEM I	95-100%	0-5%

To said ratio of the components is not included calcium sulfate, which is added as a setting regulator, and additives facilitating cement production.

Use:

Used for concrete, reinforced concrete building structures, small concrete blocks and large-sized parts which are subjected to high mechanical loads. CEM I 42,5 R (na) is suitable for concrete of higher and standard strength classes, prestressed concrete and dry mortar mixes. It is not suitable for massive concrete structures.

Method of delivery:

- bulk loaded in tank trucks

Additional information:

- this cement is subject to the notice of the Department of Environmental Hazards and Environmental Damages of the Ministry of Environment regarding the definition of terms included in point 47, paragraph 3 of Annex XVII to Regulation (EC) No. 1907/2006.
- the content of water-soluble hexavalent chromium (Cr VI+) shall not exceed 0,0002 % for a shelf life of 4 months provided that protection against exposure to water and high relative humidity (max. 75 %) is ensured during storage – see national annexes NA.1 ČSN EN 197-1 ed. 2.
- shelf life is 4 months from the date of dispatch, which is stated on the delivery, or. consignment note. At the same time, the condition must be observed that protection against the effects of water and high relative humidity (max. 75%) is ensured during storage - see. national annexes NA.1 ČSN EN 197-1 ed.2.

Quality, environment, safety and energy management

- Quality management certificate according to ČSN EN ISO 9001
- Environmental management certificate according to ČSN EN ISO 14001
- Occupational health and safety management certificate according to ČSN EN ISO 45001
- Energy management certificate according to ČSN EN ISO 50001

Technical parameters:

CEM I 42,5 R (na)			
Parameter	Unit	EN 197-1 requirement	Average achieved value
Early strength (2 days) (compressive strength)	MPa	≥ 20	28,0
Standard strength (28 days) (compressive strength)	MPa	42,5 - 62,5	59,0
Initial setting time	min	≥ 60	180
Soundness (expansion)	mm	≤ 10	0,9
Loss in ignition	%	≤ 5,0	3,5
Insoluble residue	%	≤ 5,0	0,3
Sulphate content (as SO ₃)	%	≤ 4,0	3,5
Chloride content	%	≤ 0,1	0,07
Parameter	Unit	TP 137 requirement	Maximum achieved value
Na ₂ O _{ekv.} content	%	≤ 0,80	≤ 0,78

The given values are for information only and may differ from the values of the specific samples.

Applicability of cements for exposure classes according to ČSN P 73 2404.

Exposure classes																		
Cement	Corrosion risk free	Corrosion caused by carbonation				Corrosion caused by chlorides (other than seawater)			Freezing and defreezing				Chemically aggressive environment			Abrasion		
	X0	XC1	XC2	XC3	XC4	XD1	XD2	XD3	XF1	XF2	XF3	XF4	XA1	XA2	XA3	XM1	XM2	XM3
CEM I	x	x	x	x	x	x	x	x	x	x	x	x	x	x ^{a)}	x ^{a)}	x	x	x

x ... applicable for the given exposure classes

a) under chemical sulfate aggression with the exposure classes higher than XA1 (concentration of sulfate ions SO₄²⁻ higher than 600 mg/l in the groundwater or 3000 mg/kg, or 2000 mg/kg in the underlying natural ground) it is necessary to use the sulfate-resistant cement SR. For other cases of influence of environment XA2 and XA3, such cement type is suitable.

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