



Technical list of Portland cement CEM I 52,5 R

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# 1 BUZZI Cement Hranice



## CEM I 52,5 R Portland cement CEM I 52,5 R

### Description:

CEM I 52,5 R Portland cement is produced in accordance with ČSN E N 197-1 ed. 2. It is a hydraulic binder in powder form produced by grinding together Portland clinker, calcium sulphate, additional constituents and additives. These constituents are specified technical standards EN 197-1, article 5. CEM I 52,5 R packaged Portland cement is supplied under the trademark TOPCEMENT®.

### 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.

### Characteristic features:

- very rapid strength development
- the highest early strength
- the highest standard strength
- high development of hydration heat in the process of setting and hardening

### 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

### Use:

Used for demanding concrete, reinforced concrete building structures, small concrete blocks and large-sized parts which are subjected to very high mechanical loads. CEM I 52,5 R is suitable for concrete of higher strength classes (high strength classes concrete), prestressed concrete, concrete requiring a very high early strength with a view to rapid un moulding. Not suitable for massive concrete structures.

### Method of delivery:

- bulk loaded in tank trucks
- packed in paper bags of 25 kg on 1,4 ton EUR palletes covered with a shrinking foil

### Additional information:

- this packed 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.

Technical parameters:

CEM I 52,5 R			
Parameter	Unit	EN 197-1 requirement	Average achieved values
Early strength (1 day) (compressive strength)	MPa	-	27,0
Early strength (2 days) (compressive strength)	MPa	≥ 30	42,0
Standard strength (28 days) (compressive strength)	MPa	≥ 52,5	67,0
Initial setting time	min	≥ 45	154
Soundness (expansion)	mm	≤ 10	0,9
Loss in ignition	%	≤ 5,0	3,3
Insoluble residue	%	≤ 5,0	0,3
Sulphate content (as SO <sub>3</sub> )	%	≤ 4,0	3,5
Chloride content	%	≤ 0,1	0,08

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	x <sup>a)</sup>	x <sup>a)</sup>	x	x	x

x applicable for the given exposure classes

- a) in case on an attack by a aggressive chemical with the exposure classes higher than XA1 (concentration of sulphate ions SO<sub>4</sub><sup>2-</sup> higher than 600 mg/litre in the underground water or 3000 mg/kg or 2000 mg/kg in the underlying natural ground) the high-sulphate cement SR must be used. For other cases of influence of environment XA2 and XA3, such cement type is suitable.

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