



Technical list of Portland cement CEM I 42,5 R

February 2024



CEM I 42,5 R Portland cement CEM I 42,5 R

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CEM I 42,5 R Portland cement is manufactured in accordance with ČSN EN 197-1 ed 2. It is a hydraulic binder in powder form manufactured by grinding together Portland clinker, calcium sulphate, additional constituent and additives. These constituents are specified technical standards EN 197-1, Article 5. CEM I 42,5 R packaged Portland cement is supplied under the trademark SUPERCEMENT®.

Composition of the Portland cement

Type of cement	Main constituent		Additional constit.
	Portland clinker		
CEM	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.

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- rapid increase in strength
- the high initial strength
- the high standardized strength
- higher 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 Safety Management Certificate according to ČSN ISO 45001
- Energy Management Certificate according to ČSN EN ISO 50001

I gYX:

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 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 delivery:

- bulk loaded in tank trucks or Uacs rail wagons packaged in paper bags of 25 kg on 1,4 ton EUR palletes covered with a shrinking foil

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 provided 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 42,5 R			
Parameter	Unit	EN 197-1 requirement	Average achieved values
Initial strength (2 days) (compressive strength)	MPa	≥ 20	29
Standardized strength (28 days) (compressive strength)	MPa	42,5 - 62,5	59
Setting initiation	minutes	≥ 60	161
Volume stability (expansion)	mm	≤ 10	1,3
Loss on ignition	%	≤ 5,0	3,1
Insoluble residue	%	≤ 5,0	0,27
Sulphate content (as SO ₃)	%	≤ 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.

Usability of cements for the degree of environmental influence according to ČSN EN 206+A2 and ČSN P 73 2404

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Cement	corrosion risk free	corrosion caused by carbonation				corrosion caused by chlorides (other than seawater)			alternating freeze -thaw action				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 ... usable for the given degree of environmental

a) under chemical sulfate aggression with the degree of environmental influence exceeding XA1 (concentration of sulfate ions SO₄²⁻ greater than 600 mg/l in the groundwater or 3000 mg/kg, optionally 2000 mg/kg in the natural ground) it is necessary to use the sulfate-resistant cement SR. With the content of SO₄²⁻ up to 1500 mg/l it is possible to use CEM I with adequate dose of pozzolant admixture (e.g. with at least 20% fly ash content). For other cases of influence of environment XA2 and XA3, such cement type is suitable.

4-01565

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