



Technical list of Portland cement with limestone CEM II/A-LL 42,5 R

February 2024

# Cement Hranice



## CEM II/A-LL 42,5 R Portland cement with limestone CEM II/A-LL 42,5 R

### Description:

Portland cement with limestone CEM II/A-LL 42,5 R 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, LL limestone, calcium sulphate, additional constituents and additives. These constituents are specified the technical norm EN 197-1, article 5.

### Characteristic features:

- rapid increase in strength
- high initial strength
- high standardized strength
- middle 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
- Environment Management Certificate according to ČSN EN ISO 14001
- Occupation Safety Management Certificate according to ČSN ISO 45001
- Energy Management Certificate according to ČSN EN ISO 50001

### Use:

Used for concrete, reinforced concrete building structures, small concrete blocks and large-sized parts which are subjected to high mechanical load. CEM II/A-LL 42,5 R is suitable for concrete of higher and standard strength classes, prestressed, selfcompacting, visible concrete and dry mix mortars.

### Method of delivery:

- bulk loaded in tank trucks or Uacs rail wagons

### 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-ed.2.

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Type of cement	Main constituent		Additional constit.
	Portland clinker	Limestone LL	
CEM II/A-LL	80-94%	6-20%	0-5%

To said ration of the componenet does not includ calciumslfate, which is added as a setting regulator, and additives facilitating cement production.

Technical parameters:

CEM II/A-LL 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	57
Setting initiation	minutes	≥ 60	165
Volume stability (expansion)	mm	≤ 10	1,2
Sulphate content (as SO <sub>3</sub> )	%	≤ 4,0	2,5
Chloride content	%	≤ 0,1	0,08

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

Właściwości i wymagania techniczne cementu CEM II/A-LL 42,5 R zgodnie z normami EN 197-1 i EN 12068-1, a także z normami ČSN EN 206+A2 i ČSN P 73 2404

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Cement	corrosion risk free	corrosion caused by carbonation				corrosion caused by chlorides (other than seawater)			alternating free-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 II/A-LL	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 ... usable for the given degree of environmental  
a) under chemical sulfate aggression with the degree of environmental influence exceeding XA1 (concentration of sulfate ions SO<sub>4</sub><sup>2-</sup> 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. As far as the XA2 and XA3 degree, caused by the aggressive CO<sub>2</sub> (concentration of aggressive CO<sub>2</sub> exceeding 40 mg/litre in ground water is concerned, such cement type cannot be used. For other cases of influence of environment XA2 and XA3, such cement type is suitable.

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