

PRODUCT DATA SHEET

CEM II/A-V 42,5 R - NA

Low-alkali Portland fly ash cement

Production plant – Chełm Cement Plant

CEM II/A-V 42,5 R

Portland fly ash cement

Production plant – Gdynia Milling Plant



reduced CO₂
emissions



CEM II/A-V 42.5 R - NA Portland fly ash cement is a commonly used special cement according to PN-EN 197-1 and additionally meets the requirements of the PN-B 19707 standard as a low-alkali cement (NA). It is a cement with high early strength (R) and strength class 42.5.

CEM II/A-V 42.5 R Portland fly ash cement is a cement for general use according to PN-EN 197-1. It is a cement with high early strength (R) and strength class 42.5.

Low-alkali Portland fly ash cement is produced by Cemex Polska in the Chełm cement plant. The main components of this cement are: Portland cement clinker and silica fly ash (V).

Portland ash cement is produced by Cemex Polska in the Gdynia milling plant. The main components of this cement are: Portland cement clinker and silica fly ash (V).

The National Certificate of the Constancy of Performance for CEM II/A-V 42.5 R - NA cement was issued by the Łukasiewicz Research Network - ICiMB under the number **008-UWB-263**. The National Declaration of Performance and the Safety Data Sheet are also available for this cement.

Certificate of the Constancy of Performance for cement CEM II/A-V 42.5 R was issued by the Łukasiewicz Research Network - ICiMB under the number **1487-CPR-031-06**. The Declaration of Performance and the Safety Data Sheet are also available for this cement.





Instytut Techniki Budowlanej

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CERTIFICATE No 238/2023

of TYPE III ENVIRONMENTAL DECLARATION

Products:

Cement CEM II/A-V 42,5 R Chełm

Cement CEM II/A-V 42,5 R Gdynia

Manufacturer:

Cemex Polska Sp. z o.o.

ul.Krakowiaków 46, 02-255 Warszawa, Poland

confirms the correctness of the data included in the development of
Type III Environmental Declaration and accordance with the requirements of the standard

EN 15804

Sustainability of construction works.

Environmental product declarations.

Core rules for the product category of construction products.

This certificate, issued on 10th March 2023 is valid for 5 years
or until amendment of mentioned Environmental Declaration

Head of the Thermal Physic, Acoustics
and Environment Department

Agnieszka Winkler-Skalna
Agnieszka Winkler-Skalna, PhD



Deputy Director
for Research and Innovation

Krzysztof Kuczyński
Krzysztof Kuczyński, PhD

Warsaw, March 2023

PRODUCT EMISSIONS

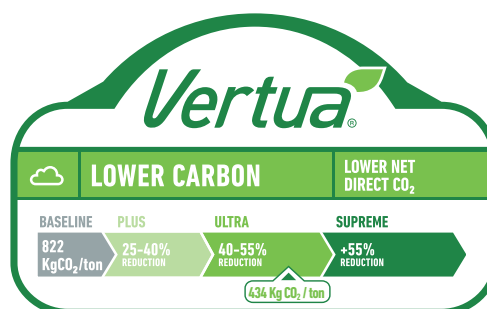
The Type III Environmental Product Declaration (EPD) for CEM II/A-V 42.5 R CEMEX cement was issued and verified in March 2023 by the Construction Technology Institute (ITB) under the number 238/2023 and is available in Polish and English.

Net CO₂ emission per 1 ton of CEM II/A-V 42.5 R cement is **434 kg CO₂/t** of cement (gross emission = **562 kg CO₂/ton** of cement).

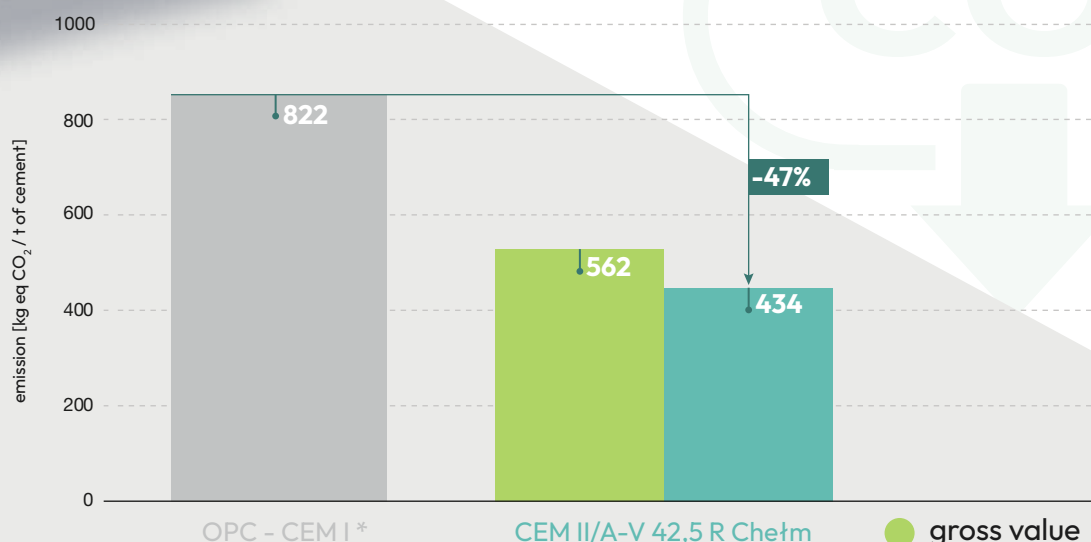
A net emission reduction of 47% compared to the standard GCCA (Global Cement and Concrete Association) net emission figure of 822 kg CO₂/t CEM I cement allows CEM II/A-V 42.5 R to be classified as **Vertua® Ultra** cement.

The gross value includes CO₂ emissions from process emissions, hard coal combustion, electricity, transport, and the combustion of alternative (waste) fuels, excluding the biomass fraction.

The net value does not include CO₂ emissions from the combustion of alternative (waste) fuels.



More information about the parameters describing the product's impact on the environment can be found in the Type III Environmental Product Declarations (EPD) at www.cemex.pl



* Calculation basis: Standard GCCA value for cement clinker emissions (global weighted average of direct net cement clinker emissions) from "Getting the Number Right" (GNR) in 2000: 862 kg CO₂/t of cement clinker. Cement reference value (CEM I with 95% cement clinker content): 822 kg CO₂/t cement (GWP values calculated according to recognized standards are available on request).



PRODUCT CHARACTERISTICS

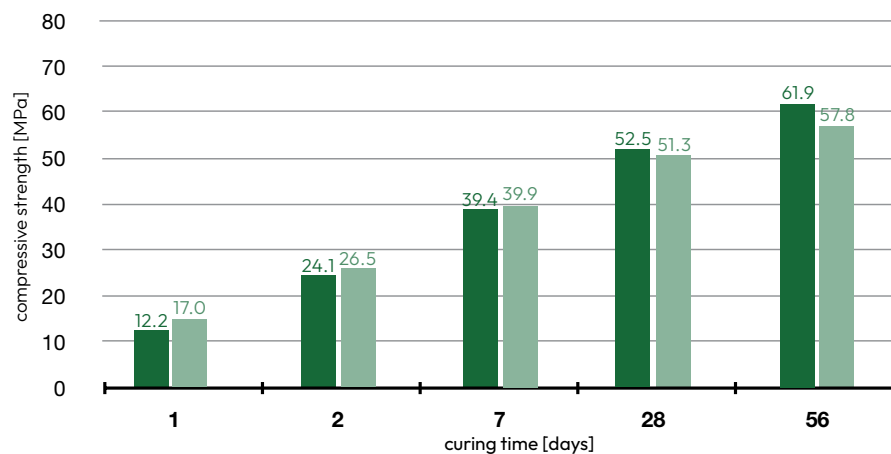
CEM II/A-V 42,5 R-NA / CEM II/A-V 42,5 R
Product Data Sheet
2023



HYDRATION HEAT

PN-EN 196-9

— CEM II/A-V 42,5 R CHEŁM
■ characteristic value
(after 41 h)



DEVELOPMENT OF CEMENT COMPRESSIVE STRENGTH

■ CEM II/A-V 42,5 R CHEŁM*
■ CEM II/A-V 42,5 R GDYNIA**

* Presented test results are the average values of self-control tests from the period 01.01.2024 – 31.03.2024. These values are not guaranteed by the manufacturer, do not constitute an offer within the meaning of the Civil Code, and cannot constitute grounds for any claims.

** Presented test results are the average values of technical tests from the period 01/01/2024 – 31/03/2024. These values are not guaranteed by the manufacturer, do not constitute an offer within the meaning of the Civil Code, and cannot constitute grounds for any claims

PHYSICOCHEMICAL PROPERTIES

Property	Requirements	Test results Chełm*	Test results Gdynia**	Tests acc. to standard	Notes
Sulphate content (as SO ₃) [%]	≤ 4.0	2.86	2.60	PN-EN 196-2	Requirements acc. to PN-EN 197-1
Chloride content [%]	≤ 0.10	0.046	0.060	PN-EN 196-21	
Start of setting time [min]	≥ 60	225	168	PN-EN 196-3	
End of setting time [min]	-	264	210	PN-EN 196-3	
Volume constancy [mm]	≤ 10	0.9	1.1	PN-EN 196-3	
Water demand [%]	-	29.4	28.2	PN-EN 196-3	
Specific surface area [cm ² /g]	-	4614	4168	PN-EN 196-6	
Compressive strength [MPa]					Requirements acc. to PN-B-19707
- after 2 days	≥ 20.0	23.8	27.8	PN-EN 196-1	
- after 28 days	≥ 42.5 i ≤ 62.5	52.4	52,8		
Alkali content Na ₂ O _{eq} [%]	≤ 1.2	0.80	-	PN-EN 196-2	Requirements acc. to PN-B-19707
Alkali content Na ₂ O _{eq} [%]	-	-	0.75	PN-EN 196-2	

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PERFORMANCE PROPERTIES

concrete mix	<ul style="list-style-type: none">● good workability of the concrete mix● good compatibility with mineral admixtures and additives● good water retention
hardened concrete	<ul style="list-style-type: none">● high early and standard strength● increase in strength over a longer curing period (over 28 days)● possibility of use at lower ambient temperatures

APPLICATION OF CEMENT

CEM II/A-V 42,5 R - NA, CEM II/A-V 42,5 R

CEM II/A-V 42,5 R - NA cement, produced in the Celem cement plant, is characterized by a special property of the cement, i.e., low NA alkali content

The use of this cement allows the production of concretes that are characterized by high durability in conditions resulting in the exposure to alkaline corrosion when using aggregates with increased reactivity.

The use of CEM II/A-V 42,5 R cement allows you to reduce the burden on the environment by reducing the carbon footprint of concrete.

Thanks to its properties, this cement has a wide range of applications, such as:

- **Ready-mix concrete** according to PN-EN 206 and the Polish supplement PN-B-06265 in the full range of strength and consistency classes, and especially:
 - Concrete for structural and non-structural elements of the building
 - Self-compacting concrete
 - Flooring concretes
- **Prefabrication of plain and reinforced concrete**
 - Foundation, wall and ventilation blocks, concrete rings, ceiling slabs, staircase flights
 - Vibro-pressed elements (plain and dyed) and large-size prefabricated elements
 - Aerated concrete elements
- **Concrete for infrastructure** such as:
 - Structural concrete in road engineering structures in accordance with WWiORB M-13.01.00 v04
 - Concrete surfaces in traffic category KR1÷KR3, environmental category E3 in accordance with WWiORB D-05.03.04 v02
 - Concrete made using sliding formwork
 - Concretes with increased durability and strength
 - Substructures and ground stabilization
 - Grouts for soil injection
 - Special purpose concrete (e.g. tremie)
- **Concrete for geotechnical use** (piles, columns, diaphragm walls)
- **Dry mortars**
- **Other uses**
 - Masonry and plaster mortars manufactured at the factory and on the construction site
 - Cement flooring subfloor

CEMENT APPLICATION

For the production of concrete of all environmental impact classes in accordance with the European standard PN-EN 206 and the Polish supplement PN-B-06265, except for classes XA2 and XA3

Exposure classes ✓ acceptable scope of application ✗ confirmation of suitability required	No risk of environmental aggression or corrosion	Korozja zbrojenia											Agresja wobec betonu										Interaction from prestressing steel
		Corrosion caused by carbonatation					Chloride-induced corrosion						Freezing/thawing				Chemically aggressive environment			Abrasion-induced aggression			
							not originating from sea water			originating from sea water													
X0	XC1	XC2	XC3	XC4	XD1	XD2	XD3	XS1	XS2	XS3	XF1	XF2	XF3	XF4	XA1	XA2 ^{a)}	XA3 ^{a)}	XM1	XM2	XM3			
CEM II/A-V 42,5 R ^{d)}	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓	✓	✓		

^{a)} In exposure classes XA2 and XA3 – in the case of chemical aggression caused by sulphates (except for their marine origin) – sulphate-resistant cement (SR) compliant with the requirements of the PN-EN 197-1 standard or sulphate-resistant cement (HSR) compliant with the requirements of the PN-B-19707 standard is used.

^{d)} Cements for making concrete according to this standard may contain only fly ash with a maximum of 5,0% loss on ignition (LOI)



When using type II mineral additives (e.g., silica fly ash), it is possible to fully use the standard provisions regarding the application of the *k* factor concept.



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If you are interested in additional materials regarding EPD cards and certificates and want to obtain more information about low-emission cements offered by Cemex Polska, please visit www.cemex.pl or scan the QR code.

