

# PRODUCT DATA SHEET

## CEM II/A-V 52,5 R – NA

Low-alkali Portland fly ash cement



reduced CO<sub>2</sub>  
emissions



low-alkali



Portland fly ash cement CEM II/A-V 52.5 R – NA is a common-use 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 52.5.

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).

The National Certificate of Constancy of Performance for CEM II/A-V 52.5 R – NA cement was issued by the Łukasiewicz Research Network – ICiMB under the number **008-UWB-189**. The National Declaration of Performance and the Safety Data Sheet are also available for this cement.





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# **CERTIFICATE № 241/2023**

## **of TYPE III ENVIRONMENTAL DECLARATION**

Products:

**CEM II/A-V 52,5 R - NA Chełm**

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 10<sup>th</sup> 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, PhD



Deputy Director  
for Research and Innovation

  
Krzysztof Kuczyński, PhD

Warsaw, March 2023

# PRODUCT EMISSIONS

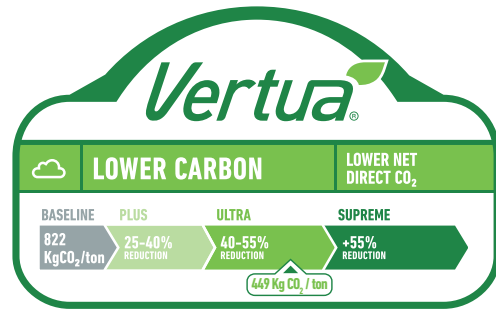
The Type III Environmental Product Declaration (EPD) for CEM II/A-V 42.5 R CEMENT cement was issued and verified in March 2023 by the Institute of Construction Technology (ITB) under the number 238/2023 and is available in Polish and English.

Net CO<sub>2</sub> emission per 1 ton of cement CEM II/A-V 52.5 R - NA is **449 kg CO<sub>2</sub>/t** of cement (gross emission = **581 kg CO<sub>2</sub>/t** of cement).

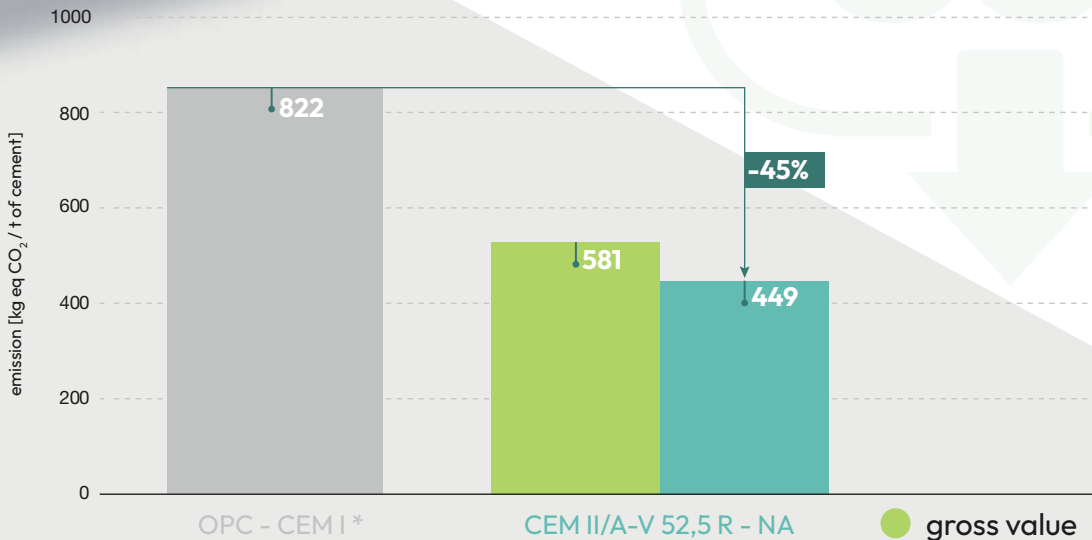
Net emission reduction of 45% in relation to the standard GCCA (Global Cement and Concrete Association) indicator of net 822 kg CO<sub>2</sub>/t CEM I cement allows for the classification of CEM II/A-V 52.5 R - NA as a **Vertua® Ultra** cement.

**The gross value includes CO<sub>2</sub> 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 CO<sub>2</sub> 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](http://www.cemex.pl)

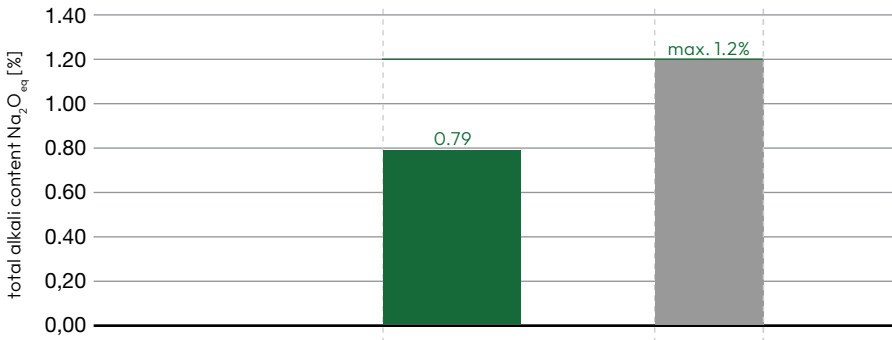


\* Calculation basis: Standard GCCA value for cement clinker emissions (global weighted average of direct net cement clinker emissions) from "Getting the Number Right" (GNR) in 2000: 862 kg CO<sub>2</sub>/t of cement clinker. Reference value Cement (CEM I with 95% cement clinker content): 822 kg CO<sub>2</sub>/t of cement (GWP values calculated according to recognized standards are available on request).



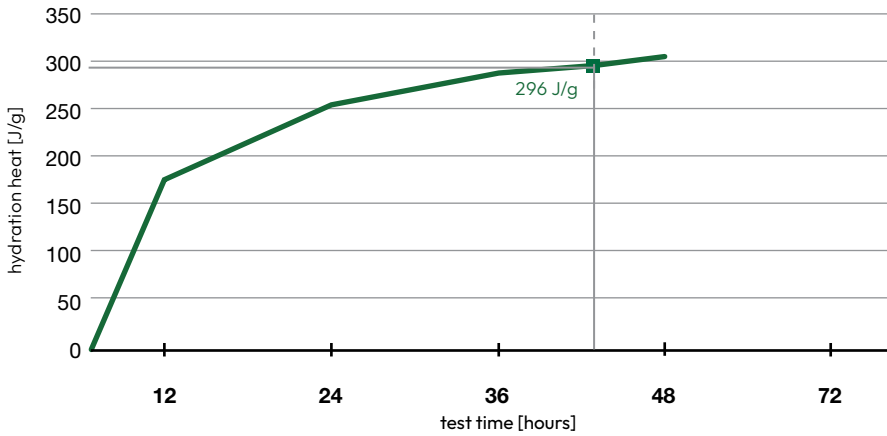
# PRODUCT FEATURES

CEM II/A-V 52,5 R - NA  
Product Data Sheet  
2023



## TOTAL ALKALI CONTENT

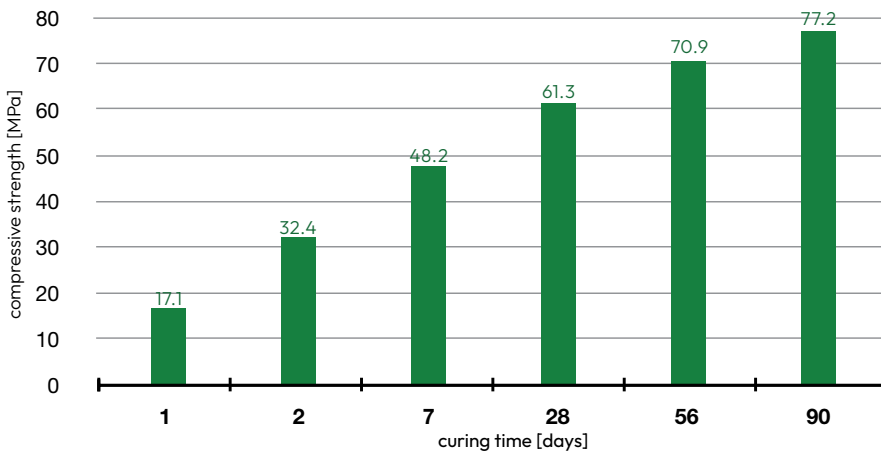
■ CEM II/A-V 52,5 R - NA



## HYDRATION HEAT

PN-EN 196-9

— CEM II/A-V 52,5 R - NA  
■ characteristic value  
(after 41h)



## DEVELOPMENT OF CEMENT COMPRESSIVE STRENGTH

■ CEM II/A-V 52,5 R - NA

Presented test results are the average values of self-control tests from the period 01.01.2023 - 30.06.2023. 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

Feature	Requirements	Test results *	Tests acc. to standard	Notes
Sulphate content (as SO <sub>3</sub> ) [%]	≤ 4.0	2.85	PN-EN 196-2	Requirements acc. to PN-EN 197-1
Chloride content [%]	≤ 0.10	0.044	PN-EN 196-21	
Start of setting time [min]	≥ 45	181	PN-EN 196-3	
End of setting time [min]	-	219	PN-EN 196-3	
Volume constancy [mm]	≤ 10	1.45	PN-EN 196-3	
Water demand [%]	-	31.3	PN-EN 196-3	
Specific surface area [cm <sup>2</sup> /g]	-	5030	PN-EN 196-6	
Compressive strength [MPa]				
- after 1 day	-	17.4	PN-EN 196-1	
- after 2 days	≥ 30.0	32.4		
- after 28 days	≥ 52.5	61.3		
Alkali content Na <sub>2</sub> O <sub>eq</sub> [%]	≤ 1.20	0.79	PN-EN 196-2	Requirements acc. to PN-B-19707

\* Presented test results are the average values of self-control tests from the period 01.01.2023 - 30.06.2023. These values are not guaranteed by the manufacturer, do not constitute an offer within the meaning of the provisions of the Civil Code, and cannot constitute the basis for any claims.

# PERFORMANCE PROPERTIES

- concrete mix
- good cooperation with admixtures and mineral additives
  - very good workability of concrete mixtures and maintaining consistency over time

- hardened concrete
- minimizing the risk of concrete destruction as a result of the alkaline reaction of the reactive aggregate with alkalis
  - resistance to chemically aggressive environments higher than CEM I
  - rapid development of early strength
  - very high standard strength - after 28 days
  - limited shrinkage compared to CEM I
  - minimizing the risk of efflorescence
  - possibility of use at lower ambient temperatures

# CEMENT APPLICATION

## CEM II/A-V 52,5 R - NA

CEM II/A-V 52.5 R - NA cement is characterized by a special cement property, which is a low content of NA alkali.

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

The use of CEM II/A-V 52.5 R - NA cement allows you to reduce the burden on the environment by significantly reducing the carbon footprint of concrete

Due 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, in particular:
  - High-strength, high-durability HPC and VHPC concretes
  - Bridge concrete and elements that are prestressed or made using the sliding technology
  - Self-compacting concrete (SCC) and almost self-compacting concrete (ASCC)
- **Carrying out concrete works using sliding formwork**
- **Concrete for infrastructure** such as:
  - Structural concrete in road engineering structures in accordance with WWiORB M-13.01.00 v04
  - Concrete surfaces for traffic categories KR1+KR3, environmental category E3 in accordance with WWiORB D-05.03.04 v02
  - Concretes with high durability and strength
- **Prefabrication with plain and reinforced concrete**
  - Concrete for the production of prestressed precast elements requiring high early strength
  - Small-sized prefabricated vibrated and vibropressed elements (plain and dyed)
  - Cement tiles
  - Elements made of aerated concrete
- **Production of dry mixtures**

## 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	No risk of environmental aggression or corrosion	Korozja zbrojenia											Agresja wobec betonu							Interaction from prestressing steel			
		Corrosion caused by carbonatation					Korozja wywołana chlorkami						Freezing/thawing				Chemically aggressive environment				Abrasion-induced aggression		
							not originating from sea water			originating from sea water													
✓ acceptable scope of application * confirmation of suitability required	X0	XC1	XC2	XC3	XC4	XD1 <sup>d)</sup>	XD2	XD3	XS1	XS2	XS3	XF1	XF2	XF3	XF4	XA1	XA2 <sup>a)</sup>	XA3 <sup>a)</sup>	XM1	XM2	XM3		
CEM II/A-V 52,5 R - NA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓	✓	✓	

<sup>a)</sup> 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.

<sup>d)</sup> 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](http://www.cemex.pl) or scan the QR code.

