



CETCO®



Instytut Techniki Budowlanej

ENVIRONMENTAL PRODUCT DECLARATION TYPE III ITB NO. 149/2021

ISSUANCE DATE: 05.02.2021 | VALIDITY DATE: 05.02.2026

WATERSTOP-RX, BENTOSEAL & WATERSTOPPAGE

ACCESSORIES



CETCO®

Owner of the EPD

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ITB is the verified member of
The European Platform
for EPD program
operators and LCA practitioner
www.eco-platform.org

MANUFACTURER

CETCO-Poland, Cetco Sp. z o.o. S.K.A. is an enterprise based in Poland. Its headquarters is located in Korpele. The enterprise operates in the Abrasive Product Manufacturing industry. It was first established on June 01, 2010. CETCO is an international company belonging to the AMCOL International corporation, established in 1927.

BASIC INFORMATION

This declaration is the type III Environmental Product Declaration (EPD) based on PN-EN 15804 and verified according to ISO 14025 by an external auditor. It contains the information on the impacts of the declared construction materials on the environment. Their aspects were verified by the independent body according to ISO 14025. Basically, a comparison or evaluation of EPD data is possible only if all the compared data were created according to PN-EN 15804 (see point 5.3 of the standard).

Life cycle analysis (LCA):

A1-A3 and C4 according to PN-EN 15804
(Cradle to Gate with options)

The year of preparing the EPD:

2020

Product standard:

ITB-KOT-2019/1174

Service Life:

25 years for standard products

PCR:

ITB-PCR A (PCR based on PN-EN 15804)

Declared unit:

1 kg

Reasons for performing LCA:

B2B

Origin:

Polish product



PRODUCTS DESCRIPTION AND APPLICATION

WATERSTOP-RX is a hydrophilic insulating bentonite based tape designed for sealing technological breaks in concreting. The tape swells when in contact with water which creates an active barrier waterproof. WATERSTOP-RX® is available in two sizes: 25 x 20 mm (RX-101), 20 x 10 mm (RX-103).

Applications include both vertical, as well as horizontal technological breaks in concreting, new and existing concrete structures, irregular surfaces and installation transitions through walls, such as water and sewage pipes. The WATERSTOP-RX product can be used around penetrations, at palisades and around profile steel girders I-beam passing through the plate. The product works under conditions constant and transient hydrostatic pressure.

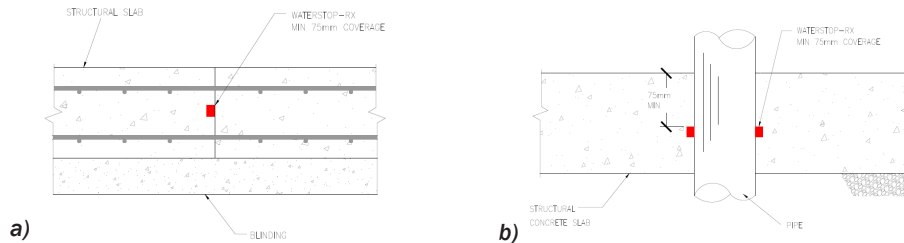


Fig. 1. Installation transitions in: a) monolithic elements and b) pipe cover

BENTOSEAL is a sealing compound based on sodium bentonite and rubber butyl, designed for preparation of surfaces and finishing works related to protection against water using selected waterproofing membranes CETCO. The BENTOSEAL product swells in contact with water, ensuring a seal preventing water penetration. Product BENTOSEAL, with the consistency of a thick grease, allows easy application and adheres to most substrates.

The BENTOSEAL product is intended for below ground level and is designed for the following applications:

- facets in horizontal and vertical corners,
- sealing at the joint around drainage pipes, culverts, curbs and window sills,
- sealing at the ends of waterproofing below ground level,
- supplementing or repairing concrete substrates before laying waterproofing membranes.

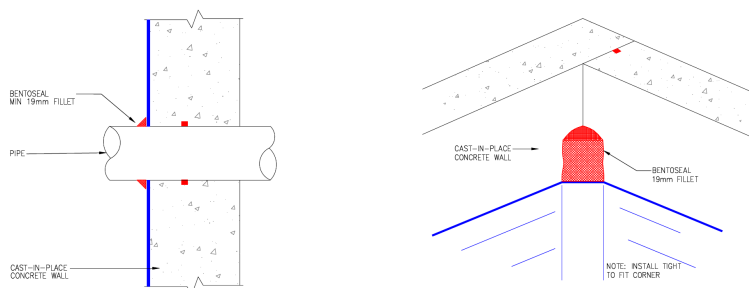


Fig. 2. Application of BENTOSEAL product.

WATERSTOPPAGE is chemically treated, granular sodium bentonite used as a detailing accessory product for CETCO Waterproofing Systems. When wetted, WATERSTOPPAGE forms into a dense, low permeable material that combines with the sodium bentonite in the waterproofing products to form a seamless waterproofing membrane. Mineralogical composition of WATERSTOPPAGE is a minimum 90% Montmorillonite with a maximum 10% native sediments and unaltered volcanic ash. Typical sieve analysis is 90% through a 20 mesh sieve and 10% through a 200 mesh sieve. Free swell rating of WATERSTOPPAGE is: two grams sifted into deionized water swells to occupy a minimum volume of 16 cc.

WATERSTOPPAGE is used to fill cavities and voids in the substrate prior to installing the main bentonite waterproofing course. It is also used to seal around slab penetrations to form a continuous waterproofing system. A fillet of WaterstoppageE can be poured at the footing/wall junction to provide additional waterproofing protection. A 1/8" (3 mm) thick layer of WATERSTOPPAGE is also applied to the top of tunnels and earth-covered roofs prior to the main waterproofing material course. WATERSTOPPAGE is not an expansion joint sealant.

LIFE CYCLE ASSESSMENT (LCA) – GENERAL RULES APPLIED

Allocation

The allocation rules used for this EPD are based on general ITB PCR A. Production of the Waterstop-RX, Bentoseal and Waterstoppage products is a line process in one factory of CETCO-Poland, Cetco Sp. zo.o. S.K.A. in Korpele (Poland). Allocation of environmental burdens was done on product mass basis. All impacts from raw materials extraction and processing were allocated in module A1 of the LCA. The packaging materials were included in the system boundaries. Impacts from the line production of CETCO-Poland, Cetco Sp. zo.o. S.K.A were inventoried and were allocated as following: 0.88% Waterstop-RX, 1.65% Bentoseal and 0.88% Waterstoppage. Module A2 includes maritime transport of bentonite from the minig sites to CETCO-Poland, Cetco Sp. zo.o. S.K.A. in Korpele as well as impacts associated with the transport of semi-products, additives, ancillary and packaging materials from their suppliers to the factory. Water consumption, generated wastes and emissions (including emissions resulting from the production of the electricity and consumption of energy resources) and were allocated to module A3.

System Limits

The life cycle analysis of the declared products covers “Product Stage”, A1-A3 and C4 modules (Cradle to Gate with options) in accordance with PN-EN 15804+A1:2014-04 and ITB PCR A. The details of the system limits are provided in the background report. Energy and water consumption, emissions to air, soil and water as well as information on generated wastes were inventoried and were included in the calculations. It can be assumed that the total sum of omitted processes does not exceed 5% of all impact categories. In accordance with PN-EN 15804+A1:2014-04, machines and facilities (capital goods) required for and during production are excluded, as is transportation of employees.

A1 and A2 Modules: Raw materials supply and transport

Bentonite used in the analyzing period of 2017 originated from i.a. Turkish and Moroccan mining sites. Rubber, resins, polymers, additives, packaging and ancillary materials come from both local and foreign suppliers. Means of transport include trucks with load: <10t, 10 – 16t and >16 and ships with load 100-550t, 500 – 3000t and > 3000t. For calculation purposes Polish and European fuel averages are applied.

A3 Module: Production

The production process of the Waterstop-RX, Bentoseal and Waterstoppage by CETCO-Poland, Cetco Sp. zo.o. S.K.A. is presented in Fig. 3.

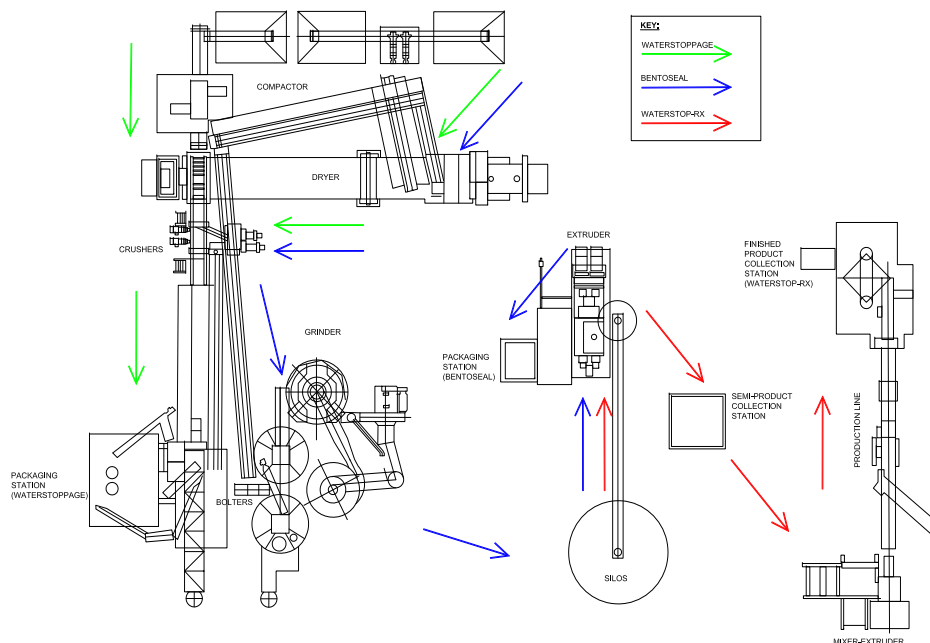


Fig. 3. A scheme of manufacturing of WATERSTOP-RX, BENTOSEAL AND WATERSTOPPAGE by CETCO-Poland, Cetco Sp. zo.o. S.K.A..

C4 Modules : End-of-life (EoL)

The WATERSTOP-RX, BENTOSEAL and WATERSTOPPAGE products are intended to be used as overlap seams, terminations of CETCO geotextile waterproofing barriers, construction joints, pipe penetrations or filling of cavities and voids. In consequence, at the end-of-life the products can either remain under the ground or be forwarded to a landfill in the form of mixed construction wastes. In the proposed scenario 100% of the products undergo landfilling. Environmental burdens occurring in module C4 are associated with exchanges to process-specific burdens (energy, land use), emissions to air via landfill gas incineration and landfill leachate. Impacts of packaging materials were not taken into consideration.

LIFE CYCLE ASSESSMENT (LCA) – GENERAL RULES APPLIED

Data Collection Period

The data for manufacture of the declared products refer to a period between 01.01.2017– 31.12.2017 (1 year). The life cycle assessments were prepared for Poland as reference area.

Data Quality

The values determined to perform the LCA analysis originate from verified CETCO-Poland, Cetco Sp. zo.o. S.K.A. inventory data.

Assumptions and Estimates

The impacts of the representative the Waterstop-RX, Bentoseal and Waterstoppage products were aggregated using weighted average. Impacts were inventoried and calculated for all the Waterstop-RX, Bentoseal and Waterstoppage products.

Calculation Rules

LCA was done in accordance with ITB PCR A document.

Databases

The data for the processes come from the following databases: Ecoinvent v.3.7, specific EPDs, ITB-Data. Specific data quality analysis was a part of external ISO 14001 audit.

LIFE CYCLE ASSESSMENT (LCA) – RESULTS

Declared Unit

The declaration refers to declared unit (DU) – 1 kg of the WATERSTOP-RX, BENTOSEAL and WATERSTOPPAGE products manufactured by CETCO-Poland, Cetco Sp. zo.o. S.K.A.

Environmental Assessment Information

(MNA – Module not assessed, MD – Module Declared, INA – Indicator Not Assessed)

Product stage	Raw material supply	A1	MD
	Transport	A2	MD
	Manufacturing	A3	MD
Construction process	Transport to construction site	A4	MNA
	Construction-installation process	A5	MNA
Use stage	Use	B1	MNA
	Maintenance	B2	MNA
	Repair	B3	MNA
	Replacement	B4	MNA
	Refurbishment	B5	MNA
	Operational energy use	B6	MNA
	Operational water use	B7	MNA
End of life	Deconstruction demolition	C1	MNA
	Transport	C2	MNA
	Waste processing	C3	MNA
	Disposal	C4	MD
Benefits and loads beyond the system boundary	Reuse-recovery-recycling potential	D	MNA

Table 1. System boundaries for the environmental characteristic the WATERSTOP-RX, BENTOSEAL and WATERSTOPPAGE products manufactured by CETCO-Poland, Cetco Sp. zo.o. S.K.A.

WATERSTOP-RX

Environmental impacts: (DU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3	C4
Global warming potential	kg CO ₂ eq.	1.37E+00	2.47E-02	3.84E-02	1.44E+00	2.65E-03
Depletion potential of the stratospheric ozone layer	kg CFC 11 eq.	2.11E-07	0.00E+00	0.00E+00	2.11E-07	3.75E-10
Acidification potential of soil and water	kg SO ₂ eq.	7.34E-03	1.81E-04	4.13E-04	7.94E-03	1.92E-05
Formation potential of tropospheric ozone	kg Ethene eq.	8.91E-04	1.31E-05	6.63E-06	9.11E-04	7.65E-07
Eutrophication potential	kg (PO ₄) ₃ - eq.	2.54E-03	3.20E-05	5.84E-06	2.57E-03	4.46E-06
Abiotic depletion potential (ADP-elements) for non-fossil resources	kg Sb eq.	2.01E-04	0.00E+00	1.42E-07	2.02E-04	1.08E-09
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	MJ	3.14E+01	3.78E-01	4.27E-01	3.22E+01	3.58E-02

Environmental aspects on resource use: (DU) 1 m²

Indicator	Unit	A1	A2	A3	A1-A3	C4
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	3.83E+00	4.36E-02	3.48E-02	3.91E+00	5.39E-04
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	3.29E+01	3.97E-01	4.48E-01	3.38E+01	3.74E-02
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	1.98E-02	0.00E+00	1.98E-02	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m ³	1.08E+00	1.76E-07	3.72E-04	1.08E+00	9.57E-05

Other environmental information describing waste categories: (DU) 1 m²

Indicator	Unit	A1	A2	A3	A1-A3	C4
Hazardous waste disposed	kg	1.30E-02	2.12E-06	3.68E-03	1.67E-02	9.23E-08
Non-hazardous waste disposed	kg	2.34E-01	9.50E-04	5.23E-01	7.70E-01	9.99E-01
Radioactive waste disposed	kg	4.93E-05	5.49E-06	0.00E+00	4.93E-05	2.39E-07
Components for re-use	kg	0.00E+00	0.00E+00	1.42E-03	1.42E-03	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	1.42E-03	1.42E-03	0.00E+00
Materials for energy recover	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ per energy carrier	INA	INA	INA	INA	INA

BENTOSEAL

Environmental impacts: (DU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3	C4
Global warming potential	kg CO ₂ eq.	1.85E+00	3.48E-03	5.35E-02	1.91E+00	2.65E-03
Depletion potential of the stratospheric ozone layer	kg CFC 11 eq.	2.40E-07	0.00E+00	0.00E+00	2.40E-07	3.75E-10
Acidification potential of soil and water	kg SO ₂ eq.	1.28E-02	2.61E-05	5.75E-04	1.35E-02	1.92E-05
Formation potential of tropospheric ozone	kg Ethene eq.	7.82E-04	1.81E-06	9.25E-06	7.93E-04	7.65E-07
Eutrophication potential	kg (PO ₄) ₃ - eq.	3.52E-02	4.61E-06	8.14E-06	3.52E-02	4.46E-06
Abiotic depletion potential (ADP-elements) for non-fossil resources	kg Sb eq.	1.17E-04	0.00E+00	1.98E-07	1.17E-04	1.08E-09
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	MJ	2.85E+01	3.80E-02	6.81E-01	2.93E+01	3.58E-02

Environmental aspects on resource use: (DU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3	C4
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	8.23E+00	2.22E-02	2.87E-02	9.74E+00	5.39E-04
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	3.00E+01	3.99E-02	7.15E-01	2.65E+01	3.74E-02
Use of secondary material	kg	5.81E-03	0.00E+00	0.00E+00	5.81E-03	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	1.99E-03	0.00E+00	1.99E-03	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m ³	5.44E-01	1.77E-08	5.19E-04	2.29E+01	9.57E-05

Other environmental information describing waste categories: (DU) 1 m²

Indicator	Unit	A1	A2	A3	A1-A3	C4
Hazardous waste disposed	kg	7.62E-03	1.53E-07	3.68E-03	1.13E-02	9.23E-08
Non-hazardous waste disposed	kg	3.24E-01	6.85E-05	5.27E-01	8.52E-01	9.99E-01
Radioactive waste disposed	kg	5.73E-05	3.95E-07	0.00E+00	5.73E-05	2.39E-07
Components for re-use	kg	0.00E+00	0.00E+00	1.98E-03	1.98E-03	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	1.98E-03	1.98E-03	0.00E+00
Materials for energy recover	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ per energy carrier	INA	INA	INA	INA	INA

WATERSTOPPAGE

Environmental impacts: (DU) 1 kg

Indicator	Unit	A1	A2	A3	A1-A3	C4
Global warming potential	kg CO ₂ eq.	5.73E-01	1.27E-02	5.35E-02	6.39E-01	2.65E-03
Depletion potential of the stratospheric ozone layer	kg CFC 11 eq.	9.03E-08	0.00E+00	0.00E+00	9.03E-08	3.75E-10
Acidification potential of soil and water	kg SO ₂ eq.	3.90E-03	9.31E-05	5.75E-04	4.56E-03	1.92E-05
Formation potential of tropospheric ozone	kg Ethene eq.	3.72E-04	6.75E-06	9.25E-06	3.88E-04	7.65E-07
Eutrophication potential	kg (PO ₄) ₃ - eq.	1.27E-03	1.64E-05	8.14E-06	1.30E-03	4.46E-06
Abiotic depletion potential (ADP-elements) for non-fossil resources	kg Sb eq.	1.66E-04	0.00E+00	1.98E-07	1.67E-04	1.08E-09
Abiotic depletion potential (ADP-fossil fuels) for fossil resources	MJ	1.32E+01	2.28E-01	6.81E-01	1.41E+01	3.58E-02

Environmental aspects on resource use: (DU) 1 m²

Indicator	Unit	A1	A2	A3	A1-A3	C4
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA
Use of renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	2.59E+00	3.73E-02	2.87E-02	4.44E+00	5.39E-04
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA
Use of non-renewable primary energy resources used as raw materials	MJ	INA	INA	INA	INA	INA
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ	1.39E+01	2.40E-01	7.15E-01	1.29E+01	3.74E-02
Use of secondary material	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	MJ	0.00E+00	1.20E-02	0.00E+00	1.20E-02	0.00E+00
Use of non-renewable secondary fuels	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	m ³	5.22E-01	1.06E-07	5.19E-04	5.24E-01	9.57E-05

Other environmental information describing waste categories: (DU) 1 m²

Indicator	Unit	A1	A2	A3	A1-A3	C4
Hazardous waste disposed	kg	1.15E-02	9.20E-07	3.68E-03	1.51E-02	9.23E-08
Non-hazardous waste disposed	kg	1.54E-01	4.11E-04	5.27E-01	6.86E-01	9.99E-01
Radioactive waste disposed	kg	1.94E-05	2.37E-06	0.00E+00	1.94E-05	2.39E-07
Components for re-use	kg	0.00E+00	0.00E+00	1.98E-03	1.98E-03	0.00E+00
Materials for recycling	kg	0.00E+00	0.00E+00	1.98E-03	1.98E-03	0.00E+00
Materials for energy recover	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	MJ per energy carrier	INA	INA	INA	INA	INA

Verification

The process of verification of this EPD is in accordance with ISO 14025 and ISO 21930. After verification, this EPD is valid for a 5-year-period. EPD does not have to be recalculated after 5 years, if the underlying data have not changed significantly

The basis for LCA analysis was EN 15804 and ITB PCR A

Independent verification corresponding to ISO 14025 (subclause 8.1.3.)	● external	internal
External verification of EPD: Ph.D. Halina Prejzner Input data verification, LCI audit, LCA: Ph.D. Eng. Justyna Tomaszewska, j.tomaszewska@itb.pl Verification of LCA: Ph.D. Eng. Michał Piasecki, m.piasecki@itb.pl		

Normative references

- ITB PCR A General Product Category Rules for Construction Products
- ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations – Principles and procedures
- ISO 21930:2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services
- ISO 14044:2006 Environmental management – Life cycle assessment – Requirements and guidelines
- ISO 15686-1:2011 Buildings and constructed assets – Service life planning – Part 1: General principles and framework
- ISO 15686-8:2008 Buildings and constructed assets – Service life planning – Part 8: Reference service life and service-life estimation
- PN-EN 15804+A1:2014-04 - Zrównoważoność obiektów budowlanych – Deklaracje środowiskowe wyrobu – Podstawowe zasady kategoryzacji wyrobów budowlanych
- PN-EN 15804+A2:2020-03 Zrównoważenie robót budowlanych – Deklaracje środowiskowe wyrobu – Podstawowe zasady kategoryzacji wyrobów budowlanych
- PN-EN 15942:2012 Sustainability of construction works – Environmental product declarations – Communication format business-to-business
- Department for Business, Energy & Industrial Strategy. Calorific values and density of fuels, 2021. <https://www.gov.uk/>
- KOBiZE Wskaźniki emisyjności CO₂, SO₂, NO_x, CO i pyłu całkowitego dla energii elektrycznej. Grudzień 2018
- ITB-KOT-2019/1174 Kauczukowo-bentonitowe taśmy uszczelniające WATERSTOP-RX (issued: 2019-12-05)





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OUR STANDARDS. YOUR PEACE OF MIND.

