# **ENVIRONMENTAL PRODUCT DECLARATION**

as per ISO 14025 and EN 15804

Owner of the Declaration	Adolf Würth GmbH & Co. KG
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-AWU-20150278-CAA1-EN
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Issue date	22.04.2015
Valid to	21.04.2020

## WIT-PM 200 Adolf Würth GmbH & Co. KG



www.bau-umwelt.com / https://epd-online.com





## **General Information**

## Adolf Würth GmbH & Co. KG

## Programme holder

IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany

## Declaration number

EPD-AWU-20150278-CAA1-EN

### This Declaration is based on the Product Category Rules: Reaction resin products, 07.2014

(PCR tested and approved by the SVR)

## Issue date

22.04.2015

# Valid to 21.04.2020

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Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)

Lell Manin

Dr. Burkhart Lehmann (Managing Director IBU)

## WIT-PM 200

## Owner of the Declaration

Adolf Würth GmbH & Co. KG Reinhold-Würth-Str. 12-17 74653 Künzelsau Germany

## Declared product / Declared unit

The declared product is dual-component reactive resin mortar WIT-PM 200 manufactured by Adolf Würth GmbH & Co. KG. The declared unit refers to 1 kg reactive resin product in the mixing ratio required for processing both components. The packaging is also included in the calculation.

#### Scope:

This document refers to the dual-component reactive resin mortar WIT-PM 200. Specific data from the Adolf Würth GmbH & Co. KG manufacturing plant in Willich, Germany was used for generating this LCA. It is based on data from 2013 which complies with the annual average. This document is translated from the German Environmental Product Declaration into English. It is based on the German original version EPD-CHE-20150024-CAA1-DE. The verifier has no influence on the quality of the translation. The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

#### Verification

The CEN Norm /EN 15804/ serves as the core PCR Independent verification of the declaration

according to /ISO 14025/

internally x externally

Prof. Dr. Birgit Grahl (Independent verifier appointed by SVR)

## Product

## **Product description**

The declared product WIT-PM 200 is a dualcomponent reactive mortar based on polyester resin which is supplied in a 2-component plastic cartridge or in a foil-tube cartridge. The WIT-PM 200 product is processed using a hand gun, battery gun or pneumatic gun and static mixer. It was developed as an inexpensive alternative for securing threaded rods and internal threaded sleeves in approved areas. The use of a perforated sleeve facilitates safe applications in perforated bricks. WIT-PM 200 is distinguished by its good application possibilities at ambient temperatures of up to 80°C.

## Application

The declared product WIT-PM 200 serves towards safe securing of threaded rods and internal threaded sleeves. Applications can be realised in cracked concrete, solid and perforated bricks with conventional anchor rods.

## Sample applications

Suitable for securing façades, awnings, wooden constructions, metal constructions, metal profiles, consoles, handrails, gratings, sanitary objects, pipelines, cable routes etc.

#### **Technical Data**

The following construction data is of relevance for the declared product WIT-PM 200 as supplied:

## Construction data

Name	Value	Unit
density acc. to /DIN 51757/ for mixing both components	1,7	g/ml
Compressive strength acc. to /EN 196/	88,1	N/mm <sup>2</sup>
Elastic modulus acc. to /DIN EN 12504-4/	14120	N/mm²



#### Storage:

Store in a cool, dry and dark place; storage temperature: +5°C to +25°C

#### Shelf life:

18 months in standard cartridge systems 12 month in foil-tube cartridge systems

#### Gel- and processing time:

-5°C	90 Min.
0°C	45 Min.
+5°C	25 Min.
+10°C	15 Min.
+20°C	6 Min.
+30°C	4 Min.
+35°C	2 Min.

#### Hardening time on dry sub-surface:

360 Min.
180 Min.
120 Min.
80 Min.
45 Min.
25 Min.
20 Min.

Please refer to the applicable technical data sheet for more detailed information.

#### Base materials / Ancillary materials

The declared WIT-PM 200 product is supplied in the form of a dual-component plastic cartridge comprising

## LCA: Calculation rules

#### **Declared Unit**

The declared product is a dual-component reactive mortar manufactured by Adolf Würth GmbH & Co. KG and referred to as WIT-PM 200. The declared unit refers to 1 kg reactive resin product in the mixing ratio required for processing both components. The resin and curing component mixing ratio is 9:1 [m/m]. (volume ratio 10:1). The packaging relating to 1 kg reactive resin product is also included in the calculation (0.3013 kg).The following table depicts the data on the declared unit

#### **Declared unit**

Name	Value	Unit
Declared unit	1	kg
Conversion factor to 1 kg	1	-

#### System boundary

The EPD type is cradle to plant gate. The following Information modules are defined in this study as System boundaries:

A1-A3 Product stage:

- A1, Raw material supply
- A2, Transport
- A3, Manufacture

A total of three information modules are reviewed in order to obtain an accurate record of the indicators and environmental Impact of the declared unit. Information modules A1 to A3 outline the provision of raw materials, transport to the production facility and the a resin component and a curing agent component at a volume ratio of 10:1. The mixing ratio of resin and curing agent components is automatically set during the squeezing process. Curing commences directly after the components are mixed. The formula does not contain any substances on the REACH candidate list (valid 17.12.2014). The product reviewed in this EPD contains the following component volumes:

#### Resin component:

Dicyclopentadiene polye	ester resin: 30 to 40 % by
weight	
Mineral fillers:	50 to 70 % by weight
Other components:	< 5 % by weight

Curing Agent component: Dibenzoyl peroxide: Mineral fillers:

10 to 15 % by weight 40 to 60 %by weight 10 to 35 % by weight

#### **Reference service life**

Other components:

The declared product WIT-PM 200 is exposed to a wide variety of environmental influences during its use phase. The anticipated reference service life depends on the specific installation situation and the exposure associated with the product. The main factors influencing the period of use involve weathering as well as mechanical and chemical loads.

actual product production process. The preliminary products are procured in Germany, Italy and France. Transport is exclusively by truck. The following process diagrams depict the production process on which this is based.



Process diagram: reactive resin mixture

Information module A1	Information module A3	Information module A2	Information module A3	
Polypropylene Schwabmünchen	Production	Transport Truck	Production	
PE-LD Schwabmünchen	Schwabmünchen	Transport Truck	Willich	

**Process diagram: Packaging** 

#### Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building



context, respectively the product-specific

characteristics of performance, are taken into account.

## LCA: Scenarios and additional technical information

As Information modules A1 to A3 were considered in this study, no details are provided on LCA scenarios and other technical information.



## LCA: Results

DESC	RIPT	ION C	F THE	SYS1	EM B	OUND	ARY	(X = IN)	CLUD	ED IN	LCA;	MND =	MOD	ULE N	OT DE	CLARED)
PROE	DUCT S	TAGE	CONST ON PR STA	TRUCTI OCESS AGE		USE STAGE					BENEFITS AN LOADS END OF LIFE STAGE BEYOND TH SYSTEM BOUNDARIE			BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES		
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse- Recovery- Recycling- potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	Х	Х	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND
RESU	JLTS	OF TH		- EN	VIRON	MENT	AL IN	IPACT	: WIT-	PM 20	0 [1kg	]				•
			Param	neter				Unit				_	A1-A	3		
		Glob	oal warmi	ng potent	ial		[	kg CO <sub>2</sub> -Eq								
	Depletic	n potenti	al of the s	tratosphe	ric ozone	layer	[k	[kg CFC11-Eq.] 5.35E-8								
	Ac	cidification	n potentia	l of land a	nd water		<u>П</u> а	[kg SO <sub>2</sub> -Eq.] 6.23E-3								
Format	ion poter	ntial of tro	nosnheri	c ozone n	aı hotochem	nical oxida	ants [k	[kg (FO4)F=4] 0.41E=4 [kg ethene=Ea,] 1.15E-3								
	Abiotic	depletion	potential	for non-fo	ossil resou	irces		[kg Sb-Eq.] 1.09E-5								
	Abiot	ic depleti	on potent	ial for foss	sil resourc	es		[MJ] 59.05								
RESU	JLTS	OF TH	IE LCA	4 - RE	SOUR	CE US	E: W	<b>T-PM 2</b>	00 [1]	(g]						
Parameter						Unit	A1-A3									
Renewable primary energy as energy carrier						[MJ]	3.98									
Renewable primary energy resources as material utilization					n	[MJ]	0.00									
Total use of renewable primary energy resources							<u> </u>									
	Non-rer	newable r	primary er	nerav as r	naterial ut	tilization	-	[MJ]	22.46							
	Total use	e of non-	renewable	e primary	energy re	sources		[MJ]	J 63.68							
Use of secondary material						[kg]	(g] 0.00									
Use of renewable secondary fuels						[MJ] 4.49E-4										
	(	Jse of no	n-renewa	ible secor	ndary fuels	8		[MJ]	[MJ] 4.84E-3							
WIT-PM 200 [1kg]																
			Para	meter				Unit					A1-A3			
Hazardous waste disposed					[kg]	2.87E-4										
Non-hazardous waste disposed					[kg]	5.12										
Radioactive waste disposed					[kg]	1.17E-3										
Components for re-use					[kg]	0.00										
		Mate	viaterials for o	or recyclin	ig overv			[Kg]	0.00							
		Fxr	orted ele	ctrical ene	erav			[M,I]		0.00						
Exported thermal energy					[MJ]		0.00									



## References

## Institut Bauen und Umwelt

Institut Bauen und Umwelt e.V., Berlin(pub.): Generation of Environmental Product Declarations (EPDs);

## **General principles**

for the EPD range of Institut Bauen und Umwelt e.V. (IBU), 2013/04 www.bau-umwelt.de

## ISO 14025

DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

## EN 15804

EN 15804:2012-04+A1 2013: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

### DIN 51757

DIN 51757:2011-01: Testing of mineral oils and related materials - Determination of density

## EN 196, Part 1

EN 196-1:2005-05: Test methods for cement - Part 1: Determination of strength

### DIN EN 12504, Part 4

DIN EN 12504-4:2004-12 Testing concrete in structures - Part 4: Determination of ultrasonic pulse velocity

## DIN EN ISO 14044:2006-10, Environment

Management - Life cycle assessment - Requirements and instructions (ISO 14044:2006); German and English versions EN ISO 14044:2006

## EN/TR 15941

Substainability of construction works - Environmental product declaration

## Gabi 6.3 Software

Comprehensive analysis http://database-documentation.gabi-software.com (10.01.2015)

## CML 2001 Nov. 2010

Environmental Impact indicators http://cml.leiden.edu/software/datacmlia.html#downloads (10.01.2015)

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