ENVIRONMENTAL PRODUCT DECLARATION

as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	VJ Technology Ltd.
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-VJT-20250481-CBA1-EN
Issue date	30/07/2025
Valid to	28/04/2030

V420+

VJ Technology Ltd.

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD VERIFIED

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General Information

VJ Technology Ltd.

Programme holder

IBU – Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

Declaration number

EPD-VJT-20250481-CBA1-EN

This declaration is based on the product category rules:

Reaction resin products, 01/08/2021
(PCR checked and approved by the SVR)

Issue date

30/07/2025

Valid to

28/04/2030

Dipl.-Ing. Hans Peters
(Chairman of Institut Bauen und Umwelt e.V.)

Florian Pronold
(Managing Director Institut Bauen und Umwelt e.V.)

V420+

Owner of the declaration

VJ Technology Ltd.
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TN23 1EN Ashford, Kent
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Declared product / declared unit

The declared product is the 2-component reaction resin mortar V420+ from VJ Technology Ltd. The declared unit refers to 1 kg of reaction resin product in the mixing ratio of the two components required for processing. The cartridge system is also included in the calculation, as the product is sold as a system by VJ Technology Ltd. The declared unit is given in [kg].

Scope:

This document refers to the 2-component reaction resin mortar V420+. For the preparation of the life cycle assessment, specific data was collected from VJ Technology Ltd. Data from 2023 are used, which correspond to the annual average.
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.

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR
Independent verification of the declaration and data according to ISO 14025:2011
☐ internally ☒ externally

Angela Schindler,
(Independent verifier)

Product

Product description/Product definition

The declared product V420+ mortar is a 2-component reaction resin mortar based on a urethane methacrylate resin and a hardener and will be delivered in a 2- component cartridge system. This product may be used in combination with a hand-, battery- or pneumatic tool and a static mixer. It was designed especially for the anchoring of threaded rods, reinforcing bars or internal threaded rod sleeves into concrete. Based on the excellent standing behaviour the usability for overhead application is given. The 2-component reaction resin mortar V420+ is characterised, by a huge range of applications including seismic actions C1 + C2 with an installation temperature from -5°C to +40°C and an application temperature up to 160°C as well as by high chemical resistance for applications in extreme environments e.g. in swimming pools (chlorine) or in closeness to the sea (salt).
For the placing of the product on the market in the EU/EFTA (with the exception of Switzerland) the Construction Products Regulation (CPR), Regulation (EU) No. 305/2011, is valid. The product requires a declaration of performance taking into account *ETA*-17/0570, *ETA*-17/0571, *ETA*-24/0076 and the CE marking.

Application

The declared product V420+ is used for the secure fixation of threaded rods from M8 up to M30, internal threaded rod sleeves sizes IT-M6 up to IT-M20 and subsequently mortared reinforcement connections 8mm up to 32mm in cracked and non-cracked concrete C20/25 to C50/60 for a working life of up to 100 years and is suitable for installation in hammer-drilled (standard SDS and hollow-core drill) holes at a temperature in the anchoring base between -5°C and 40°C.
Applications samples:
Suitable for the fixation of facades, roofs, wood constructions, metal constructions; metal profiles, columns, beams, consoles, railings, sanitary devices, cable trays, piping, post-installed rebar connection (reconstruction or reinforcement), etc.

Technical Data

The following structural data are relevant for the declared product V420+ in the delivery state:

Construction Data

Name	Value	Unit
Density acc. to DIN 51757 for mixing the two components	1,7	g/ml
Compressive strength acc. to DIN EN 196 Part 1	126	N/mm²
Flexural strength acc. to DIN EN 196 Part 1	22	N/mm²

Storage:

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

Shelf life:

18 months in standard cartridge systems

Gel and working time:

-5 °C 50 min.
0 °C 25 min.
+5 °C 15 min.
+10 °C 10 min.
+15 °C 6 min.
+20 °C 3 min.
+30 °C 2 min.

Full curing time in dry base material:

-5 °C 300 min.
0 °C 210 min.
+5 °C 120 min.
+10 °C 60 min.
+15 °C 40 min.
+20 °C 30 min.
+30 °C 30 min.

For more information, please refer to the valid technical data sheet.

Performance values of the product in accordance with the Declaration of Performance relating to its essential characteristics in accordance with *ETA*-17/0570, *ETA*-17/0571 and *ETA*-24/0076, European Technical Assessment VJ Technology Ltd. VJ Technology Injection system V420+.

Base materials/Ancillary materials

The declared product V420+ is delivered in the form of a 2-component cartridge system and consists of a resin component and a hardener component in a volume ratio of 10:1. The mixing ratio of resin and hardener component is automatically adjusted during the squeezing process. Curing begins immediately after the components are mixed.
1)The article/product/at least a partial product contains substances on the ECHA list of Substances of Very High Concem (SVHC) (27/06/2024) of more than 0.1% by weight: no.

2) The article/product/at least a partial product contains other CMR substances of category 1A or 1B that are not on the Candidate List of more than 0.1% by weight in at least a partial produce: no.

3) Biocidal products have been added to the construction product in question, or it has been treated with biocidal products (it is therefore a treated article within the meaning of the Biocidal Products Regulation (EU) No. 528/2012): no.

The product considered in this EPD contains the individual components in the following ranges:

Resin component:
Urethane methacrylate resin: 30 to 35 wt. %
Mineral fillers: 40 to 60 wt. %
Other components: < 5 wt. %

Hardener component:
Dibenzoyl peroxide: 10 to 15 wt. %
Mineral fillers: 45 to 65 wt. %
Other components: 10 bis 20 wt. %

Reference service life

The declared product V420+ is exposed to different environmental conditions during the use phase. The expected reference working life depends on the specific installation situation and the associated exposure of the product. The main factors influencing the working life are weather and mechanical and chemical exposure.

LCA: Calculation rules

Declared Unit

The declared product here is a 2-component reaction resin mortar from VJ Technology Ltd. with the designation V420+. The declared unit refers to 1 kg of reaction resin product in the mixing ratio of the two components required for processing. The cartridge, based on 1 kg of reaction resin product, is also included in the calculation with 0.1531 kg.

Declared unit data

Name	Value	Unit
Declared unit	1	kg
conversion factor	1	-
gross density	1700	kg/m^3

System boundary

Type of EPD: cradle to gate with modules C1-C4 and module D. The following information modules are defined as system boundaries in this study:

Production stage (A1–A3):
A1, raw material extraction,
A2, transport to the manufacturer,
A3, manufacturing.

End of life stage (C1–C4):
C1, removal/demolition,
C2, transport,
C3, waste treatment,
C4, disposal.

Reuse, recovery and recycling potential (D)

In order to accurately capture the indicators and environmental impacts of the declared unit, a total of 8 information modules are considered. The information modules A1 to A3 describe the material provision, transport to the production site and the production processes of the product itself.

The intermediate products are sourced from Europe. The transport is carried out exclusively by truck. The following flow diagrams illustrate the production process on which this is based.

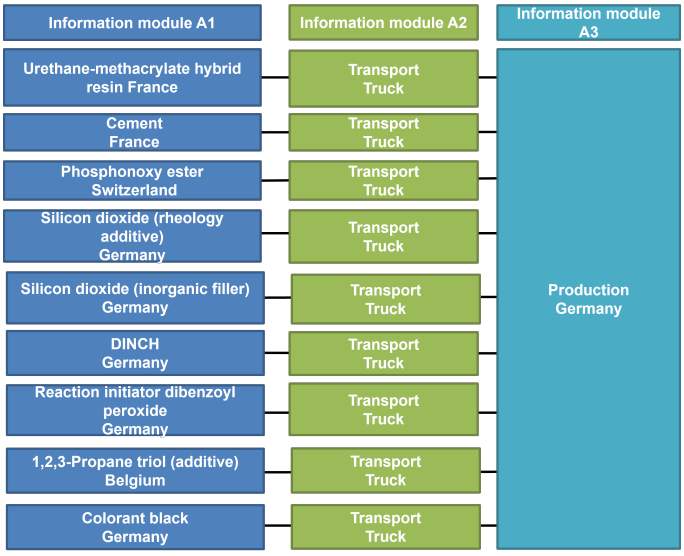

Figure 1 Information modules A1 to A3 of the product

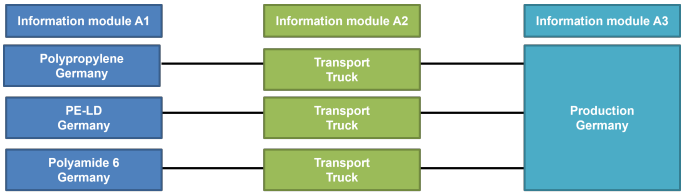

Figure 2 Information Modules A1 to A3 of the cartridge

Information modules C1 to C4 cover the removal or demolition of the building, transport to waste disposal, waste treatment and disposal of the product. Furthermore, reuse, recovery and recycling potential are shown in Information module D.

Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product´s lifespan: Europe

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 for Experts (Sphera) and ecoinvent 3.9.1 databases were used, documented in https://lcadatabase.sphera.com/ und https://ecoquery.ecoinvent.org/3.9.1/cutoff/search

LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

In the product and in the cartridge no renewable raw materials are used. Therefore, the biogenic carbon is reported as zero.

Cartridge per declared unit

Name	Value	Unit
Cartridge material PA6	0,0975	kg
Material of cartridge and cartridge components PP	0,0274	kg
Material of cartridge components HDPE/LDPE	0,0282	kg

Note: 1 kg of biogenic carbon is equivalent to 44/12 kg of CO_2.

End of Life (C1-C4)

The demolition of the product is carried out by means of an electric chisel. The electrical energy consumption for the tool is assumed to be 0.05 MJ for the declared unit. The electricity consumption is calculated using a European electricitiy mix. The construction waste is transported 200 km to the waste treatment plant by truck. In the waste treatment plant, the contruction waste is shredded and then disposed.

Name	Value	Unit
Collected as mixed construction waste	1	kg
Shredding in the shredder	1	kg
Disposal	1	kg

Reuse, recovery and recycling potential (D), relevant scenario information

Name	Value	Unit
Reuse, recovery and recycling potentials	0	kg

VJ Technology

LCA: Results

The impact assessment of the environmental loads is carried out in accordance with EN 15804+A2. The selection of characterization factors is based on PCR (EF3.1).

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				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	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg V420+

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Global Warming Potential total (GWP-total)	kg CO_2 eq	2.77E+00	6.96E-03	1.87E-02	2.72E-03	1.46E-02	0
Global Warming Potential fossil fuels (GWP-fossil)	kg CO_2 eq	2.73E+00	6.96E-03	1.84E-02	2.68E-03	1.45E-02	0
Global Warming Potential biogenic (GWP-biogenic)	kg CO_2 eq	3.65E-02	1.57E-06	0	0	0	0
Global Warming Potential luluc (GWP-luluc)	kg CO_2 eq	1.51E-03	1.04E-06	3.04E-04	3.63E-05	8.71E-05	0
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC11 eq	3.4E-05	7.65E-14	1.82E-15	4.84E-15	3.92E-14	0
Acidification potential of land and water (AP)	mol H^+ eq	6.56E-03	1.63E-05	7.07E-05	1.34E-05	1.03E-04	0
Eutrophication potential aquatic freshwater (EP-freshwater)	kg P eq	1.75E-04	3.64E-09	7.72E-08	1.04E-08	3.3E-08	0
Eutrophication potential aquatic marine (EP-marine)	kg N eq	1.58E-03	2.73E-06	3.32E-05	6.18E-06	2.65E-05	0
Eutrophication potential terrestrial (EP-terrestrial)	mol N eq	1.78E-02	2.92E-05	3.72E-04	6.83E-05	2.92E-04	0
Formation potential of tropospheric ozone photochemical oxidants (POCP)	kg NMVOC eq	6.04E-03	8.13E-06	6.57E-05	1.71E-05	8.12E-05	0
Abiotic depletion potential for non fossil resources (ADPE)	kg Sb eq	3.01E-06	3.29E-10	1.54E-09	2.81E-09	9.41E-10	0
Abiotic depletion potential for fossil resources (ADPF)	MJ	5.51E+01	1.29E-01	2.36E-01	5.02E-02	1.91E-01	0
Water use (WDP)	m^3 world eq deprived	2.62E-01	3.98E-04	2.69E-04	5.13E-04	1.66E-03	0

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg V420+

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Renewable primary energy as energy carrier (PERE)	MJ	3.75E+00	1.84E-02	2E-02	5.35E-03	3.34E-02	0
Renewable primary energy resources as material utilization (PERM)	MJ	0	0	0	0	0	0
Total use of renewable primary energy resources (PERT)	MJ	3.75E+00	1.84E-02	2E-02	5.35E-03	3.34E-02	0
Non renewable primary energy as energy carrier (PENRE)	MJ	4.2E+01	1.29E-01	2.36E-01	5.02E-02	7.8E+00	0
Non renewable primary energy as material utilization (PENRM)	MJ	1.31E+01	0	0	0	-7.61E+00	0
Total use of non renewable primary energy resources (PENRT)	MJ	5.51E+01	1.29E-01	2.36E-01	5.02E-02	1.91E-01	0
Use of secondary material (SM)	kg	0	0	0	0	0	0
Use of renewable secondary fuels (RSF)	MJ	0	0	0	0	0	0
Use of non renewable secondary fuels (NRSF)	MJ	0	0	0	0	0	0
Use of net fresh water (FW)	m^3	1.3E-02	2.59E-05	2.24E-05	1.49E-05	5.07E-05	0

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 kg V420+

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed (HWD)	kg	7.16E-09	1.83E-11	7.64E-12	7.26E-12	4.77E-11	0
Non hazardous waste disposed (NHWD)	kg	2.42E-02	3.2E-05	3.67E-05	1.38E-05	9.71E-01	0
Radioactive waste disposed (RWD)	kg	4.62E-04	1.67E-05	3.05E-07	6.31E-07	2.01E-06	0
Components for re-use (CRU)	kg	0	0	0	0	0	0
Materials for recycling (MFR)	kg	0	0	0	0	0	0
Materials for energy recovery (MER)	kg	0	0	0	0	0	0
Exported electrical energy (EEE)	MJ	5.04E-02	0	0	0	0	0
Exported thermal energy (EET)	MJ	1.12E-01	0	0	0	0	0

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 kg V420+

Parameter	Unit	A1-A3	C1	C2	C3	C4	D
Incidence of disease due to PM emissions (PM)	Disease incidence	ND	ND	ND	ND	ND	ND
Human exposure efficiency relative to U235 (IR)	kBq U235 eq	ND	ND	ND	ND	ND	ND
Comparative toxic unit for ecosystems (ETP-fw)	CTUe	ND	ND	ND	ND	ND	ND

Comparative toxic unit for humans (carcinogenic) (HTP-c)	CTUh	ND	ND	ND	ND	ND	ND
Comparative toxic unit for humans (noncarcinogenic) (HTP-nc)	CTUh	ND	ND	ND	ND	ND	ND
Soil quality index (SQP)	SQP	ND	ND	ND	ND	ND	ND

Restriction Note 1 — applies to the indicator 'Potential effect of human exposure to U235". This effect category mainly deals with the possible effect of low dose ionizing radiation on human health in the nuclear fuel cycle. It does not take into account the effects of possible nuclear accidents and occupational exposure, nor of the disposal of radioactive waste in underground facilities. The potential ionising radiation emitted by soil, radon and some construction materials is also not measured by this indicator.

Restriction Note 2 — applies to the indicators: 'Potential for scarcity of abiotic resources - non-fossil resources', 'Potential for scarcity of abiotic resources - fossil fuels', 'Water deprivation potential (user), 'Potential comparative toxic unit for ecosystems, "Potential comparative toxic unit for humans - carcinogenic effect, 'Potential comparative toxic unit for humans - non-carcinogenic effect', *Potential soil quality index'. The results of these environmental impact indicators need to be applied with caution because the uncertainties of these results are high or because there is limited experience with the indicators.

References

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www.echa.europa.eu

ecoinvent 3.9.1
Background database: ecoinvent 3.9.1
Zurich: ecoinvent (Ed.)
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IBU 2021
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Sphera
LCA for Experts, Software and Database.
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(version: 2024.2)

Regulation (EC) No. 1907/2006 of the European Parliament and
of the Council
of 18 December 2006 conceming the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

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