



# SHI PRODUCT PASSPORT

Find products. Certify buildings.

SHI Product Passport No.:

**1093-10-1020**

## OTTOCOLL® M 550 HiTack

Product group: Adhesive - Spezialkleber - Assembly glue



DICHTEN & KLEBEN

OTTO-CHEMIE  
Krankenhausstraße 14  
83413 Fridolfing



### Product qualities:



*Köttner*  
Helmut Köttner  
Scientific Director  
Freiburg, 04 December 2025



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The SHI Database is the first and only database for construction products whose comprehensive processes and data accuracy are regularly verified by the independent auditing company SGS-TÜV Saar





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## SHI Product Assessment 2024

Since 2008, Sentinel Holding Institut GmbH (SHI) has been establishing a unique standard for products that support healthy indoor air. Experts carry out independent product assessments based on clear and transparent criteria. In addition, the independent testing company SGS regularly audits the processes and data accuracy.

| Criteria               | Product category       | Harmful substance limit  | Assessment                   |
|------------------------|------------------------|--|------------------------------|
| SHI Product Assessment | Sealants and adhesives | TVOC ≤ 300 µg/m <sup>3</sup><br>Formaldehyd ≤ 24 µg/m <sup>3</sup> | Indoor Air Quality Certified |

**Valid until: 27 January 2031**



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## ■ QNG - Qualitätssiegel Nachhaltiges Gebäude

The Qualitätssiegel Nachhaltiges Gebäude (Quality Seal for Sustainable Buildings), developed by the German Federal Ministry for Housing, Urban Development and Building (BMWSB), defines requirements for the ecological, socio-cultural, and economic quality of buildings. The Sentinel Holding Institut evaluates construction products in accordance with QNG requirements for certification and awards the QNG ready label. Compliance with the QNG standard is a prerequisite for eligibility for the KfW funding programme. For certain product groups, the QNG currently has no specific requirements defined. Although classified as not assessment-relevant, these products remain suitable for QNG-certified projects.

| Criteria   | Pos. / product group   | Considered substances   | QNG assessment |
|--|--|---|----------------|
| 3.1.3<br>Schadstoffvermeidung in<br>Baumaterialien | 4.2 On-site applied<br>adhesives and sealants<br>based on PU | VOC / Emissions / hazardous<br>substances / chlorinated<br>paraffins / polybrominated<br>biphenyls (PBB) /<br>polybrominated diphenyl ethers<br>(PBDE) / SVHC | QNG ready      |

**Verification:** Sicherheitsdatenblatt 06.03.2025, Nachhaltigkeitsdatenblatt 12.03.2024



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## **DGNB New Construction 2023**

The DGNB System (German Sustainable Building Council) assesses the sustainability of various types of buildings. It can be applied to both large-scale private and commercial projects as well as smaller residential buildings. The 2023 version sets high standards for ecological, economic, socio-cultural, and functional aspects throughout the entire life cycle of a building.

| Criteria   | No. / Relevant building components / construction materials / surfaces | Considered substances / aspects                                 | Quality level   |
|--|--|---|-----------------|
| ENV 1.2 Local environmental impact, 03.05.2024 (3rd edition) | 11 Indoor bonding and waterproofing.                                   | VVOCs, VOCs, SVOC emissions and content of hazardous substances | Quality level 4 |

**Verification:** Sicherheitsdatenblatt 06.03.2025, EC1 Plus Zertifikat (12989/10.10.13) 27.01.2026

| Criteria   | No. / Relevant building components / construction materials / surfaces | Considered substances / aspects                                 | Quality level   |
|--|--|---|-----------------|
| ENV 1.2 Local environmental impact, 29.05.2025 (4th edition) | 11 Indoor bonding and waterproofing                                    | VVOCs, VOCs, SVOC emissions and content of hazardous substances | Quality level 4 |

**Verification:** Sicherheitsdatenblatt 06.03.2025, EC1 Plus Zertifikat (12989/10.10.13) 27.01.2026



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## DGNB New Construction 2018

The DGNB System (German Sustainable Building Council) assesses the sustainability of various types of buildings. It can be applied to both large-scale private and commercial projects as well as smaller residential buildings.

| Criteria                           | No. / Relevant building components / construction materials / surfaces | Considered substances / aspects     | Quality level   |
|------------------------------------|--|-------------------------------------|-----------------|
| ENV 1.2 Local environmental impact | 12 Adhesive bonds on small joints under mechanical stress              | Chlorinated paraffins, solvents, HC | Quality level 4 |

**Verification:** Nachhaltigkeitsdatenblatt 12.03.2024



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## **BNB-BN Neubau V2015**

The Bewertungssystem Nachhaltiges Bauen (Assessment System for Sustainable Building) is a tool for evaluating public office and administrative buildings, educational facilities, laboratory buildings, and outdoor areas in Germany. The BNB was developed by the former Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and is now overseen by the Federal Ministry for Housing, Urban Development and Building (BMWSB).

| Criteria                            | Pos. / product type   | Considered substance group            | Quality level   |
|-------------------------------------|---|---------------------------------------|-----------------|
| 1.1.6 Risiken für die lokale Umwelt | 8 Adhesives and sealants made of PU, SMP (silan-modified polymers), acrylic (including dispersion adhesives), or silicone | VOC / hazardous substances / biocides | Quality level 5 |

**Verification:** Sicherheitsdatenblatt 06.03.2025, Nachhaltigkeitsdatenblatt 12.03.2024, EC1 Plus Zertifikat (12989/10.10.13) 27.01.2026



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## EU taxonomy

The EU Taxonomy classifies economic activities and products according to their environmental impact. At the product level, the EU regulation defines clear requirements for harmful substances, formaldehyde and volatile organic compounds (VOCs). The Sentinel Holding Institut GmbH labels qualified products that meet this standard.

| Criteria                                | Product type | Considered substances           | Assessment            |
|---|--------------|---------------------------------|-----------------------|
| DNSH - Pollution prevention and control |              | Substances according to Annex C | EU taxonomy compliant |

**Verification:** Sicherheitsdatenblatt 06.03.2025



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## **BREEAM DE Neubau 2018**

BREEAM (Building Research Establishment Environmental Assessment Methodology) is a UK-based building assessment system that evaluates the sustainability of new constructions, refurbishments, and conversions. Developed by the Building Research Establishment (BRE), the system aims to assess and improve the environmental, economic, and social performance of buildings.

| Criteria                  | Product category   | Considered substances                             | Quality level     |
|---------------------------|--|---|-------------------|
| Hea 02 Indoor Air Quality | Interior adhesives and sealants (including flooring adhesives) | Emissions: Formaldehyde, TVOC, TSVOC, carcinogens | Exemplary quality |

**Verification:** EMICODE EC1+-Zertifikat vom 27.01.2026



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## Product labels

In the construction industry, high-quality materials are crucial for a building's indoor air quality and sustainability. Product labels and certificates offer guidance to meet these requirements. However, the evaluation criteria of these labels vary, and it is important to carefully assess them to ensure products align with the specific needs of a construction project.



This product is SHI Indoor Air Quality certified and recommended by Sentinel Holding Institut. Indoor-air-focused construction, renovation, and operation of buildings is made possible by transparent and verifiable criteria thanks to the Sentinel Holding concept.



Products bearing the Sentinel Holding Institute QNG-ready seal are suitable for projects aiming to achieve the "Qualitätssiegel Nachhaltiges Gebäude" (Quality Seal for Sustainable Buildings). QNG-ready products meet the requirements of QNG Appendix Document 3.1.3, "Avoidance of Harmful Substances in Building Materials." The KfW loan program Climate-Friendly New Construction with QNG may allow for additional funding.



The EMICODE® label, awarded by the German manufacturers' association "GEV – Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e. V.", is primarily relevant for flooring installation materials. The EMICODE® EC<sub>1</sub><sup>PLUS</sup> label, as the premium class, sets significantly stricter emission limits than the other label variants.



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## Legal notices

(\*) These criteria apply to the construction project as a whole. While individual products can positively contribute to the overall building score through proper planning, the evaluation is always conducted at the building level. The information was provided entirely by the manufacturer.

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Find our criteria here: <https://www.sentinel-holding.eu/de/Themenwelten/Pr%C3%BCfkriterien%20f%C3%BCr%20Produkte>

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## Publisher

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1K-Hybrid-Polymer STP-Klebstoff

Für Innen und Außen

M 550



## Eigenschaften

- Extrem hohe Anfangshaftung - Keine Fixierung erforderlich
- Natursteinverträglich - Verursacht keine Verfettung an Natursteinen
- Haftet auch auf feuchten Untergründen
- Elastisch - Gleicht Bewegungen aus
- Überstreichbar / Überlackierbar - bitte Anwendungshinweise im technischen Datenblatt beachten
- Silikonfrei
- Isocyanatfrei



## Anwendungsgebiete

- Kleben von Stein, Naturstein und Keramik
- Kleben von Wandverkleidungs-/Dekor-Platten im Innenbereich z.B. im Sanitär-, Küchen- und Gastrobereich oder in Kühlzellen
- Kleben von Fensterbänken, Fußbodenleisten, Zierleisten und Treppenstufen
- Kleben von Spiegeln auf Keramik, Glas, Kunststoff, Edelstahl, Aluminium, Holz, Beton etc.
- Kleben und Montieren unterschiedlichster Materialien wie Holz, Holzwerkstoffe, Kunststoffe, Metalle und mineralische Untergründe
- Kleben im lebensmittelnahen Bereich

## Normen und Prüfungen

- Entspricht den Anforderungen des Brandverhaltens nach EN 13501: Klasse E
- Unbedenklichkeitsserklärung - geprüft für den Einsatz im lebensmittelnahen Bereich (ISEGA Forschungs- und Untersuchungs-Gesellschaft mbH, Aschaffenburg)
- EMICODE® EC 1 Plus - sehr emissionsarm
- Sentinel Holding Institut - Zertifiziert und ausgezeichnet mit dem SHI-Produktpass - Einstufung für DGNB, QNG, BNB, BREEAM und EU-Taxonomie
- Französische VOC-Emissionsklasse A+
- Deklaration in Baubook Österreich
- Für Anwendungen gemäß IVD-Merkblatt Nr. 30+35 geeignet

## Technische Daten

|   |            |
|---|------------|
| Hautbildungszeit bei 23 °C/50 % rLf [min]     | ~ 10       |
| Anfangshaftung bei 23 °C [kg/m²]              | ~ 280      |
| Aushärtung in 24 Std. bei 23 °C/50 % rLf [mm] | ~ 2 - 3    |
| Verarbeitungstemperatur von/bis [°C]          | + 5 / + 40 |

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**OTTO**  
CHEMIE  
DICHTEN & KLEBEN

|  |                   |
|--|-------------------|
| Viskosität bei 23 °C                                   | pastös, standfest |
| Dichte bei 23 °C nach ISO 1183-1 [g/cm³]               | ~ 1,6             |
| Shore-A-Härte nach ISO 868                             | ~ 65              |
| Dehnspannungswert bei 100 % nach ISO 37, Typ 3 [N/mm²] | ~ 2               |
| Reißdehnung nach ISO 37, Typ 3 [%]                     | ~ 250             |
| Zugfestigkeit nach ISO 37, Typ 3 [N/mm²]               | ~ 2,5             |
| Temperaturbeständigkeit von/bis [°C]                   | - 40 / + 90       |
| Lagerstabilität bei 23 °C/50 % rLf [Monate]            | 12 <sup>1</sup>   |

1) ab Herstellung

Diese Werte sind nicht zur Erstellung von Spezifikationen bestimmt. Bitte wenden Sie sich vor der Erstellung von Spezifikationen an OTTO-CHEMIE.

## Vorbehandlung

Die Haftflächen müssen gereinigt und jegliche Verunreinigungen, wie Trennmittel, Konservierungsmittel, Fett, Öl, Staub, Wasser, alte Kleb-/Dichtstoffe sowie andere die Haftung beeinträchtigende Stoffe entfernt werden. Reinigen von nicht-porösen Untergründen: Reinigung mit OTTO Cleaner T (keine Ablaufzeit erforderlich) und sauberem, flusenfreiem Tuch. Reinigen von porösen Untergründen: Oberflächen mechanisch, z.B. mit einer Stahlbürste oder einer Schleifscheibe, von losen Partikeln säubern.

Die Haftflächen müssen sauber, staub- und fettfrei sowie tragfähig sein.

## Grundierungstabelle

Die Anforderungen an elastische Abdichtungen und Klebungen sind abhängig von den jeweiligen äußereren Einflüssen. Extreme Temperaturschwankungen, Dehn- und Scherkräfte, wiederholter Kontakt mit Wasser etc. stellen hohe Ansprüche an eine Haftverbindung. In solchen Fällen ist bei Empfehlungen (z.B. +/OTTO Primer 1216) die Verwendung des genannten Primers ratsam, um eine möglichst belastbare Verbindung zu erzielen.

|                                   |                                |
|-----------------------------------|--------------------------------|
| Acrylglas/PMMA                    | +                              |
| Acryl-Sanitär (z.B. Wannen)       | T / 1217 / 1225                |
| Aluminium blank                   | + / 1216                       |
| Aluminium eloxiert                | +                              |
| Aluminium, pulverbeschichtet      | T                              |
| Aluverbundplatten                 | +                              |
| Beton                             | + / 1225 / (1105) <sup>1</sup> |
| Betonwerkstein                    | 1216/ 1225                     |
| Edelstahl                         | +                              |
| Epoxidharzbeschichtung            | +                              |
| Faserzement                       | + / 1225                       |
| Gipskartonplatten (Standard)      | + / (1105) <sup>1</sup>        |
| Glas                              | +                              |
| Holz, lackiert (lösemittelhaltig) | +                              |
| Holz, lackiert (wässrige Systeme) | +                              |
| Holz, lasiert (lösemittelhaltig)  | +                              |
| Holz, lasiert (wässrige Systeme)  | +                              |
| Holz, unbehandelt                 | + / 1225 / (1105) <sup>1</sup> |
| Keramik, glasiert                 | +                              |
| Keramik, unglasiert               | +                              |
| Kupfer                            | + <sup>2</sup>                 |
| Melaminharzplatten                | +                              |
| Naturstein                        | 1216 <sup>3</sup>              |
| OSB-Platten (Grobspanplatten)     | +                              |
| Polycarbonat                      | T / 1225 / 1227                |
| Putz                              | 1225 / (1105) <sup>1</sup>     |
| PVC-hart                          | T / 1101 / 1217                |
| PVC-weich-Folien                  | 1101 / 1227                    |
| Spanplatten                       | +                              |
| Zink, verzinktes Eisen            | +                              |

- 1) OTTO Primer 1105 wird ausschließlich für die Spiegelklebung empfohlen.
- 2) Siehe "Besondere Hinweise"
- 3) Nur für Klebungen geeignet. Für Abdichtungen empfehlen wir OTTOSEAL® S 70.

+ = ohne Grundierung gute Haftung

- = nicht geeignet

T = Test/Vorversuch empfohlen

## Besondere Hinweise

Die Anfangshaftung kann je nach den zu klebenden Materialien und der Auftragsweise des Klebstoffes deutlich variieren. Der aufgetragene Klebstoff sollte besonders bei dampfdichten Materialien mit wenig Wasser aus einer handelsüblichen Sprühflasche befeuchtet werden. Beim Fügen der Substrate sollte durch entsprechendes Andrücken der vollständige Verbund von dem Klebstoff auf den Klebeflächen sichergestellt werden. Wir empfehlen Vorversuche bei jeder Anwendung!

Für die Applikation empfehlen wir Premium Geräte wie die Handpress-Pistolen H27, H37, H40, H245.

Vor dem Einsatz des Produktes hat der Anwender sicherzustellen, dass die Werkstoffe/Materialien in dem Kontaktbereich mit diesem und miteinander verträglich sind und sich nicht schädigen oder verändern (z. B. verfärben). Bei Werkstoffen/Materialien, die in der Folge im Bereich des Produktes verarbeitet werden, hat der Anwender im Vorfeld abzuklären, dass deren Inhaltsstoffe bzw. Ausdünstungen zu keiner Beeinträchtigung oder Veränderung (z. B. Verfärbung) des Produktes führen können.

Gegebenenfalls hat der Anwender Rücksprache mit dem jeweiligen Hersteller der Werkstoffe/Materialien zu nehmen.

Farben, Lacke, Kunststoffe und andere Beschichtungsmaterialien müssen mit dem Kleb-/Dichtstoff verträglich sein.

Bei UV-belasteten Klebungen/ Abdichtungen von Glas empfehlen wir die Verwendung unserer hochwertigen Silikon-Kleb-/Dichtstoffe wie OTTOSEAL® S 110 / S 120 (für Glasfalzabdichtungen), OTTOSEAL® S 10 (u.a. für Klebungen), OTTOSEAL® S 7 (für Wetterversiegelungen) oder OTTOCOLL® S 81 (für geklebtes Fenster).

Bei UV-belasteten Klebungen/ Abdichtungen von transparenten Kunststoffen wie z. B. Acrylglas empfehlen wir unseren Silikon-Dichtstoff OTTOSEAL® S 72.

Nicht für die Abdichtung/Klebung von Kupfer unter UV-/Temperatureinwirkung geeignet.

Die Farbtöne können durch Umwelteinflüsse beeinträchtigt werden (hohe Temperatur, Chemikalien, Dämpfe, UV-Strahlung).

Dieses hat keinen Einfluss auf die Produkteigenschaften.

## Anwendungshinweise

Um optimale Haftung und gute mechanische Eigenschaften zu erzielen, muss der Einschluss von Luft vermieden werden.

Die Zeit bis zur Aushärtung kann durch Feuchtigkeitszufuhr und höhere Temperaturen verkürzt werden.

Bei der flächigen Klebung von dampfdichten Substraten sollte der Klebstoff befeuchtet werden.

Unser Produkt kann überstrichen / überlackiert werden. Die Verträglichkeit zwischen Beschichtung und unserem Produkt muss vor der Anwendung durch den Anwender/Verarbeiter überprüft werden - ggf. unter Produktionsbedingungen. Unsere OTTO Anwendungstechnik unterstützt Sie gerne unverbindlich. Wird nach erfolgreicher Verträglichkeitsprüfung unser Produkt in Ausnahmefällen ganzflächig überstrichen, muss auch diese Beschichtung der elastischen Bewegung des Dichtstoffes folgen können. Andernfalls können Rissbildungen im Anstrich oder optische Beeinträchtigungen entstehen.

Farben, Lacke, Kunststoffe und andere Beschichtungsmaterialien müssen mit dem Kleb-/Dichtstoff verträglich sein. Materialien mit alkalischen Inhaltsstoffen können Wechselwirkungen in Form von Verfärbungen verursachen.

Reinmineralische Anstriche (z.B. auf Basis Kaliwasserglas oder Kalk) sind aufgrund der Sprödigkeit des Anstrichs zum ganzflächigen Überstreichen nicht geeignet.

Eine Überarbeitung mit Beschichtungsstoffen kann je nach klimatischen Bedingungen und Anstrichart ab etwa 1 Stunde erfolgen.

In Kontakt mit oxidativ härtenden Anstrichen (z.B. Alkydharz-Lacke) können Trocknung und Aushärtung verzögert oder verhindert werden.

Wir empfehlen Vorversuche.

Beschichtungen sowie deren Ausdünstungen können zu Verfärbungen des Kleb-/ Dichtstoffes führen.

Verfärbungen von Beschichtungen durch Wechselwirkungen mit dem Kleb-/ Dichtstoff sind nicht ausgeschlossen.

Wegen der Vielzahl möglicher Einflüsse bei der Verarbeitung und der Anwendung ist vom Verarbeiter stets eine Probeverarbeitung und -anwendung vorzunehmen.

Das konkrete Aufbrauchdatum ist dem Gebindeaufdruck zu entnehmen und zu beachten.

Wir empfehlen, unsere Produkte in den ungeöffneten Originalgebinden trocken (< 60 % rLF) im Temperaturbereich von + 15° C bis + 25° C zu lagern. Werden die Produkte über längere Zeiträume (mehrere Wochen) bei höherer Temperatur/ Luftfeuchtigkeit gelagert und / oder transportiert, kann eine Verringerung der Haltbarkeit bzw. eine Veränderung der Materialeigenschaften nicht ausgeschlossen werden.

Verarbeitung als Spiegel-Klebstoff:

Es dürfen nur Spiegel geklebt werden, deren Reflexions- und Schutzschicht der DIN EN 1036 entsprechen. Im Zweifelsfall bitte unbedingt dazu Informationen des Spiegelherstellers einholen.

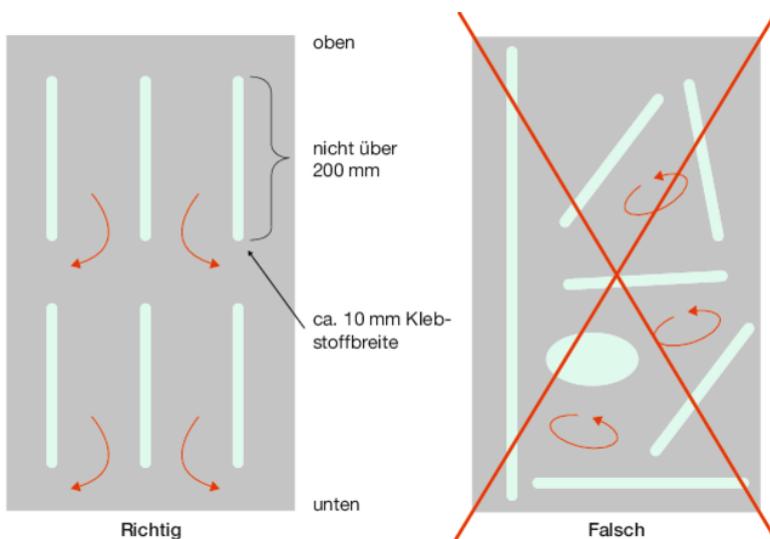
Mit dem Spiegel Saint Gobain MIRALITE ® PURE kann unter bestimmten Objektbedingungen eine Unverträglichkeit nicht ausgeschlossen werden.

Für die Klebung des Saint Gobain MIRALITE ® PURE empfehlen wir unsere Silikon-Spiegel-Klebstoffe OTTOCOLL® S 16 bzw. OTTOCOLL® S 610.

Mineralische Untergründe, wie z. B. Beton, Putz, Mauerwerk, Gipskarton, Porenbeton sowie unbehandeltes Holz müssen unbedingt mit OTTO Primer 1105 grundiert werden. Die Verwendung dieses Primers dient dabei nicht nur der

Haftverbesserung, sondern auch der unbedingt notwendigen Absperrung der Alkalität. Nicht abgesperrte Alkalität kann in Kombination mit Feuchtigkeit u. U. zur Beschädigung der Spiegelrückseite führen.

Den Spiegelklebstoff bei der Klebung niemals punktförmig oder flächig, sondern in senkrechten Streifen auftragen. Die Länge eines Klebestreifens soll 200 mm nicht übersteigen. Je m<sup>2</sup> Spiegelfläche sind mindestens 3 Klebestreifen so aufzutragen, dass nach Anpressen des Spiegels die Streifenbreite 10 mm nicht überschreitet und der Abstand zwischen den Klebestreifen mindestens 200 mm beträgt, damit die für die Vulkanisation erforderliche Luftzirkulation möglich ist. Für eine optimale Tragfähigkeit ist eine Haftfläche von mindestens 10 cm<sup>2</sup>/kg Spiegelgewicht erforderlich.



Zur Vermeidung der Einsperrung des Vernetzer-Spaltprodukts ist ein Mindestabstand zwischen Spiegel und Untergrund von 1,6 mm zwingend einzuhalten. Dieser lässt sich auf zweckmäßigste Weise durch das Aufkleben von Abstandshaltern erreichen. Der hier vorgeschriebene Mindestabstand dient dem Abtransport des Vernetzer-Spaltprodukts. Damit werden die vom Institut des Gläserhandwerks in Hadamar geforderten Mindesthinterlüftungsabstände für Spiegel in keinem Fall aufgehoben.

Die für die Klebung erforderlichen Festigkeitswerte werden frühestens nach 48 Stunden erreicht (23 °C, ca. 50 % rLf). Aufgrund der hohen Anfangshaftung ist je nach Spiegelgewicht eine zusätzliche Vorfixierung in aller Regel nicht zwingend erforderlich. Bei Bedarf kann eine Vorfixierung mit wieder entfernbaren, mechanischen Hilfen, wie z. B. Klötzen, Keilen oder einseitig wirkenden Klebebändern von vorne (Spiegelseite) oder mit doppelseitigen Klebebändern, z.B. OTTOTAPE Fixierband (aufgedoppelt verlegt), von hinten (Rückseite) erfolgen.

Zur äußereren Spiegelversiegelung in Verbindung mit Natursteinen empfehlen wir OTTOSEAL® S 70 und OTTOSEAL® S 80, in Verbindung mit anderen Materialien wie Keramik, Metall, Glas etc. empfehlen wir OTTOSEAL® S 120 und OTTOSEAL® S 125. Zu beachten ist, dass die Versiegelung erst nach vollständiger Aushärtung des Spiegelklebstoffs und dem Entweichen der Spaltprodukte erfolgen darf. Diese Zeit beträgt etwa 7 Tage. Bei Spiegeln ohne Glasrücken sollten nur die vertikalen Spiegelränder versiegelt werden, um eine Beschädigung der Spiegelbeschichtung durch Kondenswasserbildung zu vermeiden. Bitte beachten Sie die nachfolgende Zeichnung.

Bei der Montage von Spiegeln an Decken und bei der Wandmontage von Spiegeln, deren Oberkante über 4 m über der Bodenfläche liegt, müssen die Spiegel zusätzlich mechanisch z.B. durch Schrauben bzw. Einlegen in Rahmen gesichert werden.

#### LAGERUNG:

Bei längerer Lagerung bei höheren Temperaturen ( $\geq 30^{\circ}\text{C}$ ) kann es zu einer Verringerung der Anfangshaftung kommen.

#### Lieferform

|  | 310 ml Kartusche | 580 ml Alu-Folienbeutel |
|--|------------------|-------------------------|
| <input checked="" type="radio"/> grau    | M550-04-C02      | M550-08-C02             |
| <input checked="" type="radio"/> schwarz | M550-04-C04      | auf Anfrage             |
| <input type="radio"/> weiß               | M550-04-C01      | M550-08-C01             |
| <b>Stück pro Verpackungseinheit</b>      | <b>20</b>        | <b>20</b>               |
| <b>Stück pro Palette</b>                 | <b>1200</b>      | <b>600</b>              |

Keine Sonderfarben möglich.

Aus darstellungstechnischen Gründen können die abgebildeten Farben von den Originalfarben der Produkte abweichen.

#### Sicherheitshinweise

Bitte das Sicherheitsdatenblatt beachten.

Nach erfolgter Aushärtung ist das Produkt geruchlos.

## **Entsorgung**

Hinweise zur Entsorgung siehe Sicherheitsdatenblatt.

## **Markenhinweise**

EMICODE® ist eine eingetragene Marke der GEV e. V. (Düsseldorf)

## **Mängelhaftung**

Die vorstehenden Informationen und unsere anwendungstechnische Beratung in Wort, Schrift und durch Versuche erfolgen nach bestem Wissen, gelten jedoch nur als unverbindliche Hinweise, auch in Bezug auf etwaige Schutzrechte Dritter. Die Angaben in dieser Druckschrift befreien den Verarbeiter nicht von einer eigenen Prüfung unserer Produkte im Hinblick auf ihre Eignung für die beabsichtigten Verfahren und Zwecke. Anwendung, Verwendung und Verarbeitung unserer Produkte und der auf Grund unserer anwendungstechnischen Beratung hergestellten Produkte erfolgen außerhalb unserer Kontrollmöglichkeiten und liegen daher ausschließlich in der Verantwortung des Verarbeiters. Unterliegt die Anwendung, für die unsere Produkte herangezogen werden, einer behördlichen Genehmigungspflicht, so ist der Anwender für die Erlangung dieser Genehmigungen verantwortlich. Wir behalten uns das Recht zur Anpassung des Produktes an den technischen Fortschritt und an neue Entwicklungen vor. Im Übrigen verweisen wir auf unsere Allgemeinen Geschäftsbedingungen, insbesondere auch bezüglich einer etwaigen Mängelhaftung. Sie finden unsere AGB unter [www.otto-chemie.de](http://www.otto-chemie.de).

**Sicherheitsdatenblatt**  
gemäß Verordnung (EG) Nr. 1907/2006, Artikel 31

Druckdatum: 06.03.2025

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überarbeitet am: 06.03.2025

**ABSCHNITT 1: Bezeichnung des Stoffs beziehungsweise des Gemischs und des Unternehmens**

· **1.1 Produktidentifikator**

· **Handelsname:** OTTOCOLL M 550 HiTack

· **1.2 Relevante identifizierte Verwendungen des Stoffs oder Gemischs und Verwendungen, von denen abgeraten wird**

· **Verwendung des Stoffes / des Gemisches** Dicht- Klebstoff

· **Verwendungen, von denen abgeraten wird** Angaben im technischen Datenblatt beachten

· **1.3 Einzelheiten zum Lieferanten, der das Sicherheitsdatenblatt bereitstellt**

· **Hersteller/Lieferant:**

Hermann Otto GmbH

Krankenhausstraße 14

D-83413 Fridolfing

Tel.: 0049/(0)8684/908-0

Fax.: 0049/(0)8684/908-1840

· **Auskunftgebender Bereich:**

Tel.: 0049- (0)8684- 908- 2363 ( -4300 )

E-Mail: msds@otto-chemie.de

· **1.4 Notrufnummer:**

Giftnotruf München Tel.: 0049- (0)89- 192 40 (24 h von Mo.-So.)

für Österreich: 0043-1-40 6-43 43 (Vergiftungsinformationszentrale der Gesundheit Österreich GmbH- 24h täglich)

Tel: 0049 (0)89 220 61012 (Carechem 24)

**ABSCHNITT 2: Mögliche Gefahren**

· **2.1 Einstufung des Stoffs oder Gemischs**

· **Einstufung gemäß Verordnung (EG) Nr. 1272/2008**

Das Produkt ist gemäß CLP-Verordnung nicht eingestuft.

· **2.2 Kennzeichnungselemente**

· **Kennzeichnung gemäß Verordnung (EG) Nr. 1272/2008** entfällt

· **Gefahrenpiktogramme** entfällt

· **Signalwort** entfällt

· **Gefahrenhinweise** entfällt

· **Zusätzliche Angaben:**

Während der Verarbeitung und Aushärtung für gute Belüftung sorgen.

EUH208 Enthält Trimethoxyvinylsilan, 3-(2-Aminoethylamino)-propyltrimethoxysilan. Kann allergische Reaktionen hervorrufen.

EUH210 Sicherheitsdatenblatt auf Anfrage erhältlich.

· **2.3 Sonstige Gefahren**

Während der Verarbeitung und Aushärtung des Materials werden chemische Stoffe in die Luft freigesetzt (siehe Punkt 11). Deshalb für gute Raumbelüftung und bei Bedarf für Absaugung sorgen.

· **Ergebnisse der PBT- und vPvB-Beurteilung**

· **PBT:** Nicht anwendbar.

· **vPvB:** Nicht anwendbar.

· **Feststellung endokrinschädlicher Eigenschaften**

Dieses Produkt enthält keine Bestandteile, die gemäß REACH Artikel 57(f) oder der delegierten Verordnung (EU) 2017/2100 der Kommission oder der delegierten Verordnung (EU) 2018/605 der Kommission in Mengen von 0,1 % oder mehr endokrinschädliche Eigenschaften aufweisen.

**ABSCHNITT 3: Zusammensetzung/Angaben zu Bestandteilen**

· **3.2 Gemische**

· **Beschreibung:** Kleb- und Dichtstoff auf Basis Hybrid-Polymer STP

(Fortsetzung auf Seite 2)

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# Sicherheitsdatenblatt

## gemäß Verordnung (EG) Nr. 1907/2006, Artikel 31

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überarbeitet am: 06.03.2025

**Handelsname:** OTTOCOLL M 550 HiTack

(Fortsetzung von Seite 1)

**Gefährliche Inhaltsstoffe:**

CAS: 2768-02-7 Trimethoxyvinylsilan <2,5%  
 EINECS: 220-449-8   
 Reg.nr.: 01-2119513215-52-xxxx 1B, H317

CAS: 1760-24-3 3-(2-Aminoethylamino)-propyltrimethoxysilan <1%  
 EINECS: 217-164-6   
 Reg.nr.: 01-2119970215-39-xxxx

**zusätzl. Hinweise:**

Der Wortlaut der angeführten Gefahrenhinweise ist dem Abschnitt 16 zu entnehmen.  
 Partikelförmige Rohstoffe mit Inhalationsrisiko sind untrennbar in der Produktmasse gebunden und lösen daher keine Einstufung als inhalationsgefährdend aus. Aufgrund der physikalischen Eigenschaften des Produkts ist eine inhalative Exposition durch Partikeln nicht möglich.

**ABSCHNITT 4: Erste-Hilfe-Maßnahmen****4.1 Beschreibung der Erste-Hilfe-Maßnahmen****nach Einatmen:**

Frischluftzufuhr, gegebenenfalls Atemspende, Wärme. Bei anhaltenden Beschwerden Arzt konsultieren.

**nach Hautkontakt:**

Sofort mit Wasser und Seife abwaschen und gut nachspülen.

Bei andauernder Hautreizung Arzt aufsuchen.

**nach Augenkontakt:**

Augen bei geöffnetem Lidspalt mehrere Minuten unter fließendem Wasser ausspülen und Arzt konsultieren. Auf Kontaktlinsen prüfen und falls vorhanden entfernen.

**nach Verschlucken:**

Kein Erbrechen herbeiführen. Sofort Arzthilfe zuziehen. Verpackung oder Etikett vorzeigen.

**4.2 Wichtigste akute und verzögert auftretende Symptome und Wirkungen**

Keine weiteren relevanten Informationen verfügbar.

**4.3 Hinweise auf ärztliche Soforthilfe oder Spezialbehandlung**

Keine weiteren relevanten Informationen verfügbar.

**ABSCHNITT 5: Maßnahmen zur Brandbekämpfung****5.1 Löschmittel****Geeignete Löschmittel:**

CO2, Löschpulver oder Wassersprühstrahl. Größeren Brand mit Wassersprühstrahl oder alkoholbeständigem Schaum bekämpfen.

**5.2 Besondere vom Stoff oder Gemisch ausgehende Gefahren**

Beim Erhitzen oder im Brandfalle Bildung giftiger Gase möglich.

**5.3 Hinweise für die Brandbekämpfung****Besondere Schutzausrüstung:**

Atemschutzgerät anlegen.

Explosions- und Brandgase nicht einatmen.

**ABSCHNITT 6: Maßnahmen bei unbeabsichtigter Freisetzung****6.1 Personenbezogene Vorsichtsmaßnahmen, Schutzausrüstungen und in Notfällen anzuwendende Verfahren**

Für ausreichende Lüftung sorgen.

**6.2 Umweltschutzmaßnahmen:**

Nicht in die Kanalisation/Oberflächenwasser/Grundwasser gelangen lassen.

**6.3 Methoden und Material für Rückhaltung und Reinigung:**

Kontaminiertes Material als Abfall nach Abschnitt 13 entsorgen.

(Fortsetzung auf Seite 3)

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**Sicherheitsdatenblatt**  
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- **6.4 Verweis auf andere Abschnitte**  
Informationen zur persönlichen Schutzausrüstung siehe Abschnitt 8.

(Fortsetzung von Seite 2)

## ABSCHNITT 7: Handhabung und Lagerung

- **7.1 Schutzmaßnahmen zur sicheren Handhabung**  
Für gute Belüftung/Absaugung am Arbeitsplatz sorgen.  
Siehe Punkt 8: Persönliche Schutzausrüstung.
- **7.2 Bedingungen zur sicheren Lagerung unter Berücksichtigung von Unverträglichkeiten**  
**Lagerung:**  
· **Anforderung an Lagerräume und Behälter:** Eindringen in den Boden sicher verhindern.  
· **Zusammenlagerungshinweise:** Getrennt von Lebensmitteln lagern.  
· **Weitere Angaben zu den Lagerbedingungen:**  
In gut verschlossenen Gebinden kühl und trocken lagern.  
Vor Hitze und direkter Sonnenbestrahlung schützen.
- **Lagerklasse LGK gemäß TRGS 510:** 12
- **GISCode RS10** Verlegewerkstoffe, methoxysilanhaltig, kennzeichnungsfrei (keine Grundierungen)
- **7.3 Spezifische Endanwendungen** Keine weiteren relevanten Informationen verfügbar.

## ABSCHNITT 8: Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstungen

- **8.1 Zu überwachende Parameter**
- **Bestandteile mit arbeitsplatzbezogenen, zu überwachenden Grenzwerten:**
- **CAS-Nr. Bezeichnung des Stoffes % Art Wert Einheit**
- **Zusätzliche Expositionsgrenzwerte bei möglichen Verarbeitungsgefahren:**
- 67-56-1 Methanol**  
AGW Langzeitwert: 130 mg/m<sup>3</sup>, 100 ml/m<sup>3</sup>  
2(II);DFG, EU, H, Y
- **Zusätzliche Hinweise:** Als Grundlage dienten die bei der Erstellung gültigen Listen.
- **8.2 Begrenzung und Überwachung der Exposition**
- **Geeignete technische Steuerungseinrichtungen** Keine weiteren Angaben, siehe Abschnitt 7.
- **Individuelle Schutzmaßnahmen, zum Beispiel persönliche Schutzausrüstung**
- **Allgemeine Schutz- und Hygienemaßnahmen:**  
Die üblichen Vorsichtsmaßnahmen beim Umgang mit Chemikalien sind zu beachten.  
Vor den Pausen und bei Arbeitsende Hände waschen.  
Berührung mit den Augen und der Haut vermeiden.
- **Handschatz** Schutzhandschuhe.
- **Handschuhmaterial**  
Die Schutzhandschuhe sollten in jedem Fall auf ihre Arbeitsplatz- spezifische Eignung ( z.B. Feinfühligkeit, mechanische Beständigkeit, Produktverträglichkeit, Permeationszeit) geprüft werden.  
Anweisungen und Informationen der Handschuhhersteller zur Anwendung, Lagerung, Pflege und zum Austausch der Handschuhe befolgen. Die Schutzhandschuhe sollten bei Beschädigung oder ersten Abnutzungerscheinungen sofort ersetzt werden. Die Auswahl eines geeigneten Handschuhs ist nicht nur vom Material, sondern auch von weiteren Qualitätsmerkmalen abhängig und von Hersteller zu Hersteller unterschiedlich. Bezugsnummer EN 374.  
Empfohlenes Handschuhmaterial: z.B. Nitrilkautschuk  
Empfohlene Materialstärke: > 0,4 mm
- **Durchdringungszeit des Handschuhmaterials** Durchbruchzeit: 10 - 30 min
- **Augen-/Gesichtsschutz** Schutzbrille.
- **Körperschutz:** Arbeitsschutzkleidung.

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(Fortsetzung auf Seite 4)

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**ABSCHNITT 9: Physikalische und chemische Eigenschaften**

|   |  |
|---|--|
| · <b>9.1 Angaben zu den grundlegenden physikalischen und chemischen Eigenschaften</b> |  |
| · <b>Allgemeine Angaben</b>   |  |
| · <b>Aggregatzustand</b>  | Flüssig  |
| · <b>Farbe</b>  | gemäß Produktbezeichnung   |
| · <b>Geruch:</b>  | charakteristisch   |
| · <b>Schmelzpunkt/Gefrierpunkt:</b>   | nicht anwendbar  |
| · <b>Siedepunkt oder Siedebeginn und Siedebereich</b>                                 |  |
| · <b>Untere und obere Explosionsgrenze</b>  | nicht bestimmt   |
| · <b>untere:</b>  | entfällt   |
| <b>obere:</b>   | entfällt   |
| · <b>Flammpunkt:</b>  | Nicht anwendbar (Testmethoden für Flammpunkt nicht gültig für pastöse Stoffe und hochviskose Flüssigkeiten)            |
| · <b>Zersetzungstemperatur:</b>   | Nicht bestimmt.  |
| · <b>pH-Wert:</b>   | Nicht anwendbar.   |
| · <b>Viskosität:</b>  | Nicht bestimmt.  |
| · <b>Löslichkeit</b>  |  |
| · <b>Wasser:</b>  | nicht bzw. wenig mischbar  |
| · <b>Verteilungskoeffizient n-Oktanol/Wasser (log-Wert)</b>                           | Nicht bestimmt.  |
| · <b>Dampfdruck:</b>  | Nicht anwendbar.   |
| · <b>Dichte und/oder relative Dichte</b>  |  |
| · <b>Dichte:</b>  | siehe Technisches Datenblatt   |
| · <b>Relative Dichte</b>  | Nicht bestimmt.  |
| · <b>Dampfdichte</b>  | Nicht anwendbar.   |
| · <b>Relative Dampfdichte</b>   | Nicht bestimmt.  |
| · <b>Partikeleigenschaften</b>  | Nicht bestimmt   |
| · <b>9.2 Sonstige Angaben</b>   |  |
| · <b>Form:</b>  | pastös   |
| · <b>Zündtemperatur:</b>  | Nicht bestimmt.  |
| · <b>Explosive Eigenschaften:</b>   | Das Produkt ist nicht explosionsgefährlich, jedoch ist die Bildung explosionsgefährlicher Dampf-/Luftgemische möglich. |
| · <b>Angaben über physikalische Gefahrenklassen</b>                                   |  |
| · <b>Aerosole</b>   | entfällt   |
| · <b>Entzündbare Flüssigkeiten</b>  | entfällt   |

**ABSCHNITT 10: Stabilität und Reaktivität**

- **10.1 Reaktivität** Keine weiteren relevanten Informationen verfügbar.
- **10.2 Chemische Stabilität**
- **Thermische Zersetzung / zu vermeidende Bedingungen:**  
Keine Zersetzung bei bestimmungsgemäßer Verwendung.  
Starke Erhitzung vermeiden.
- **10.3 Möglichkeit gefährlicher Reaktionen**  
Durch Kontakt mit Luftfeuchtigkeit, Wasser und protische Mittel entsteht Methanol.
- **10.4 Zu vermeidende Bedingungen** Keine weiteren relevanten Informationen verfügbar.
- **10.5 Unverträgliche Materialien:** Keine weiteren relevanten Informationen verfügbar.
- **10.6 Gefährliche Zersetzungprodukte:** siehe Punkt 5.2

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(Fortsetzung auf Seite 5)

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**ABSCHNITT 11: Toxikologische Angaben**

· 11.1 Angaben zu den Gefahrenklassen im Sinne der Verordnung (EG) Nr. 1272/2008

· akute Toxizität: Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.

· Einstufungsrelevante LD/LC50-Werte:

**2768-02-7 Trimethoxyvinylsilan**

Oral LD50 7.100 mg/kg (rat)

Dermal LD50 3.200 mg/kg (rab)

Inhalativ LC50/4 h 16,8 mg/l (rat)

**1760-24-3 3-(2-Aminoethylamino)-propyltrimethoxysilan**

Oral LD50 2.995 mg/kg (rat)

Dermal LD50 >2.000 mg/kg (rab)

· **Primäre Reizwirkung:**

· Bei Hautkontakt: Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.

· Bei Augenkontakt: Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.

· **Sensibilisierung der Atemwege/Haut**

dermal: nicht sensibilisierend

Quelle: Analogieschluss

Prüfbericht gem. OECD Guideline 406 (Guinea Pigs)

Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.

· **Keimzellmutagenität** Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.

· **Karzinogenität** Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.

· **Reproduktionstoxizität** Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.

· **Spezifische Zielorgan-Toxizität bei einmaliger Exposition**

Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.

· **Spezifische Zielorgan-Toxizität bei wiederholter Exposition**

Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.

· **Aspirationsgefahr** Aufgrund der verfügbaren Daten sind die Einstufungskriterien nicht erfüllt.

· **Sonstige Angaben (zur experimentellen Toxikologie):**

Produkt hydrolysiert unter Bildung von Methanol (CAS-Nr. 67-56-1). Methanol ist giftig beim Einatmen, Verschlucken und Berührung mit der Haut. Methanol schädigt die Organe. Methanol ist leichtentzündlich. Beim Einatmen von Aerosolnebeln können Gesundheitsschäden auftreten.

· 11.2 Angaben über sonstige Gefahren

· **Endokrinschädliche Eigenschaften**

Keiner der Inhaltsstoffe ist enthalten.

**ABSCHNITT 12: Umweltbezogene Angaben**

· 12.1 Toxizität Keine weiteren relevanten Informationen verfügbar

· 12.2 Persistenz und Abbaubarkeit Keine weiteren relevanten Informationen verfügbar.

· **Sonstige Hinweise:** Produkt biologisch nicht abbaubar.

· 12.3 Bioakkumulationspotenzial Keine weiteren relevanten Informationen verfügbar.

· 12.4 Mobilität im Boden Keine weiteren relevanten Informationen verfügbar.

· 12.5 Ergebnisse der PBT- und vPvB-Beurteilung

· **PBT:** Nicht anwendbar.

· **vPvB:** Nicht anwendbar.

· 12.6 Endokrinschädliche Eigenschaften

Dieses Produkt enthält keine Bestandteile, die gemäß REACH Artikel 57(f) oder der delegierten Verordnung (EU) 2017/2100 der Kommission oder der delegierten Verordnung (EU) 2018/605 der Kommission in Mengen von 0,1 % oder mehr endokrinschädliche Eigenschaften aufweisen.

· 12.7 Andere schädliche Wirkungen

· Weitere ökologische Hinweise:

· Allgemeine Hinweise:

Nicht in das Grundwasser, in Gewässer oder in die Kanalisation gelangen lassen.

(Fortsetzung auf Seite 6)

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(Fortsetzung von Seite 6)

- **Verordnung (EG) Nr. 111/2005 zur Festlegung von Vorschriften für die Überwachung des Handels mit Drogenaustauschstoffen zwischen der Gemeinschaft und Drittländern**

Keiner der Inhaltsstoffe ist enthalten.

- **Nationale Vorschriften:**

- **Wassergefährdungsklasse:** WGK 1 (Selbsteinstufung VwVwS): schwach wassergefährdend.

- **Angaben zum internationalen Registrationsstatus:**

|                     |                       |
|---------------------|-----------------------|
| DSL - Canada        | gelistet bzw. konform |
| IECSC - China       | nicht gelistet        |
| PICCS - Philippines | nicht gelistet        |
| TCSI- Taiwan        | nicht gelistet        |
| TSCA - USA          | gelistet bzw. konform |
| AICS - Australia    | gelistet bzw. konform |
| ENCS - Japan        | nicht gelistet        |
| ECL - Korea         | nicht gelistet        |
| NZIoC - New Zealand | gelistet bzw. konform |
| REACH - Europe      | gelistet bzw. konform |

- **15.2 Stoffsicherheitsbeurteilung:** Eine Stoffsicherheitsbeurteilung wurde nicht durchgeführt.

## ABSCHNITT 16: Sonstige Angaben

Die Angaben stützen sich auf den heutigen Stand unserer Kenntnisse, sie stellen jedoch keine Zusicherung von Produkteigenschaften dar und begründen kein vertragliches Rechtsverhältnis. Dieses Sicherheitsdatenblatt entspricht der Verordnung (EG) Nr. 1907/2006, Artikel 31 in der Fassung der Verordnung (EU) 2020/878.

- **Relevante Sätze**

H226 Flüssigkeit und Dampf entzündbar.  
 H317 Kann allergische Hautreaktionen verursachen.  
 H318 Verursacht schwere Augenschäden.  
 H332 Gesundheitsschädlich bei Einatmen.  
 H411 Giftig für Wasserorganismen, mit langfristiger Wirkung.

- **Datum der Vorgängerversion:** 06.03.2025

- **Versionsnummer der Vorgängerversion:** 6

- **Abkürzungen und Akronyme:**

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Flam. Liq. 3: Entzündbare Flüssigkeiten – Kategorie 3

Acute Tox. 4: Akute Toxizität – Kategorie 4

Eye Dam. 1: Schwere Augenschädigung/Augenreizung – Kategorie 1

Skin Sens. 1: Sensibilisierung der Haut – Kategorie 1

Skin Sens. 1B: Sensibilisierung der Haut – Kategorie 1B

Aquatic Chronic 2: Gewässergefährdend - langfristig gewässergefährdend – Kategorie 2

- \* Daten gegenüber der Vorversion geändert

# Konformitätserklärung für Produkte mit Muster-EPDs

Der Industrieverband Deutsche Bauchemie e.V., in dem Hermann Otto GmbH Mitglied ist, hat sogenannte Muster-Umweltproduktdeklarationen (Muster-EPD) entwickelt und durch das unabhängige Institut Bauen und Umwelt e.V. (IBU) verifizieren lassen.

Diese durch das IBU verifizierten Muster-EPDs wurden von der Deutschen Bauchemie und dem IBU veröffentlicht.

Anhand unserer Produktrezepturen wurde überprüft, ob unsere Produkte durch die Muster-EPD abgedeckt werden.

Mit dieser Erklärung bestätigen wir, dass das Produkt

## OTTOCOLL® M 550

von der beigefügten Muster-EPD erfasst wird

Products based on polyurethane or silane-modified polymer, group 1  
EPD-FEI-20220021-IBG1-EN

Das heißt, dass die Ökobilanzdaten und die sonstigen Inhalte der beigefügten Muster-EPD auf das oben genannte Produkt zutreffen und für die Bewertung der Nachhaltigkeit von Gebäuden, in denen das oben genannte Produkt verbaut wurde, herangezogen werden können.

Hermann Otto GmbH

Fridolfing, 25.05.2023

# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

|                          |                                      |
|--------------------------|--------------------------------------|
| Owner of the Declaration | DBC, EFCC, FEICA, IVK                |
| Programme holder         | Institut Bauen und Umwelt e.V. (IBU) |
| Publisher                | Institut Bauen und Umwelt e.V. (IBU) |
| Declaration number       | EPD-FEI-20220021-IBG1-EN             |
| Issue date               | 01.06.2022                           |
| Valid to                 | 31.05.2027                           |

## Products based on polyurethane or silane-modified polymer, group 1

DBC - Deutsche Bauchemie e.V.

EFCC - European Federation for Construction Chemicals

FEICA - Association of the European Adhesive and Sealant Industry

IVK - Industrieverband Klebstoffe e.V.

[www.ibu-epd.com](http://www.ibu-epd.com) | <https://epd-online.com>



## 1. General Information

DBC - Deutsche Bauchemie e.V.

EFCC - European Federation for Construction Chemicals

FEICA - Association of the European Adhesive and Sealant Industry

IVK - Industrieverband Klebstoffe e.V.

**Programme holder**

IBU – Institut Bauen und Umwelt e.V.

Hegelplatz 1

10117 Berlin

Germany

Products based on polyurethane or silane-modified polymer, group 1

**Declaration number**

EPD-FEI-20220021-IBG1-EN

**This declaration is based on the product category rules:**

Reaction resin products, 07.2014

(PCR checked and approved by the SVR)

**Issue date**

01.06.2022

**Valid to**

31.05.2027

**Owner of the declaration**

DBC, Mainzer Landstr. 55, D-60329 Frankfurt a.M.

EFCC, 172 Boulevard du Triomphe, B-1160 Brussels

FEICA, Rue Belliard 40, B-1040 Brussels

IVK, Völklingerstr. 4, D-40219 Düsseldorf

**Declared product / declared unit**

1 kg product based on polyurethane or silane-modified polymer; density 1.25 - 1.8 g/cm<sup>3</sup>

**Scope:**

This verified EPD entitles the holder to bear the symbol of the Institut Bauen und Umwelt e.V. It exclusively applies for products produced in Europe and for a period of five years from the date of issue. This EPD may be used by members of DBC, EFCC, FEICA and IVK and their members provided it has been proven that the respective product can be represented by this EPD. For this purpose a guideline is available at the secretariats of the four associations. The members of the associations are listed on the respective websites.

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 |
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| <input type="checkbox"/> internally <input checked="" type="checkbox"/> externally |
|--|



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



Dr. Alexander Röder  
(Managing Director Institut Bauen und Umwelt e.V.)



Matthias Schulz  
(Independent verifier)

## 2. Product

**2.1 Product description/Product definition**

This EPD comprises reactive products based on polyurethane (PU) or silane-modified polymer (SMP) with a volatile organic compound (VOC) content ≤1 % (VOC definition according to Decopaint Directive) and a castor oil/-derivatives content ≤ 10%. The one- or two-component reactive PU products are manufactured using polyols and isocyanates. Reactive products based on SMP polymers are usually manufactured as a one-component system from polyols and alkoxy silane in a preliminary stage. The aqueous systems consist of (a) dispersion and are crosslinked by a dispersible isocyanate. The products

fulfil manifold, often specific, functions in the construction, furnishing and repair of buildings. The product displaying the highest environmental impacts was used as a representative product for calculating the Life Cycle Assessment results (worst-case approach).

For the placing on the market in the European Union/European Free Trade Association (EU/EFTA) with the exception of Switzerland) products falling under Regulation (EU) No 305/2011 (CPR) need a Declaration of Performance taking into consideration either the relevant harmonised European standard or

the European Technical Assessment and the CE marking. For the application and use of the products the respective national provisions apply.

## 2.2 Application

Products based on polyurethane or silane-modified polymer, group 1, are used for the following applications:

### Module 1: Adhesives for parquet and floor coverings

Parquet adhesives in accordance with *EN ISO 17178* for wooden and parquet floors and flooring adhesives in accordance with *EN ISO 22636* for floor coverings

### Module 2: Reactive products for protecting and repairing concrete structures

Products for increasing the durability of concrete and reinforced concrete structures as well as for new concrete and for maintenance and repair work (requirements 2.1), products for structural bonding of strengthening materials to an existing concrete structure (requirements 2.2) and products for concrete injection for filling cracks, voids and interstices in concrete (requirements 2.3)

### Module 3: Liquid-applied roof waterproofing kits

Reactive products for waterproofing roof constructions which are applied on site

### Module 4: Reactive products for liquid-applied bridge deck waterproofing kits

Products for liquid-applied waterproofing for use on concrete bridge decks

### Module 5: Screed material, floor screeds and decorative floors

Products for screed/synthetic resin screed for use in floor constructions

### Module 6: Reactive products as an adhesive for tiles

Tile adhesives for internal and external tile installations on walls, floors and ceilings

### Module 7: Adhesives and sealants

Reactive products for use as:

- Structural and repair adhesives
- Surface and joint sealants

Applications in accordance with the manufacturer's technical documentation/declaration of performance

### Module 8: Reactive products for watertight covering kits

Products for waterproofing floors and/or walls in wet rooms inside buildings

### Module 9: Reactive products for liquid-applied waterproofing

Liquid applied products for waterproofing of buildings

### Module 10: Reactive products for waterproofing and/or for pre-treating mineral substrates

Applications in accordance with the manufacturer's technical documentation

### Module 11: Liquid-applied waterproofing membranes for use beneath ceramic tiling

### Module 12: One-component foam (OCF)

One component foam in a can is a one-component,

self-expanding, ready to use polyurethane foam used for various construction applications. It consists of a low viscous semi-fluid in a can that leaves the can as a froth and immediately forms a polyurethane foam.

**12.1 Window & External Door Sealing & Insulation:**  
Installing mechanically fixed external windows and doors with an OCF, as part of a system including sealants and tapes

**12.2 Door Installation & Fixation:**

Fixing interior doors with an OCF

**12.3 General Gap Filling:**

Filling of regularly and irregularly shaped spaces between at least two surfaces made of typical building materials with a one-component foam (OCF)

### Module 13: Sealants for glazing

Two-component reactive sealants are to be used as the second barrier of the structural hermetic seal in insulating glass units.

### Module 14: Bonded glazing sealants

One- and two-component reactive sealants are used for the bonding of insulating glass units in the window frame.

## 2.3 Technical Data

The density of the products is between 1,25 and 1,8 g/cm<sup>3</sup>, other relevant technical data can be found in the manufacturer's technical documentation.

### Module 1: Reactive products as adhesive for parquet and floor coverings

The minimum requirements of *EN ISO 17178* and *EN ISO 22636* must be maintained.

### Module 2: Reactive products for protecting and repairing concrete structures

**2.1** The requirements on essential characteristics for all intended uses in accordance with *EN 1504-2*, Tables 1 and 5 must be maintained. These are:

- Permeability to CO<sub>2</sub> (*EN 1062-6*)
- Water vapour permeability (*EN ISO 7783-1/-2*)
- Capillary absorption and permeability to water (*EN 1062-3*)
- Adhesive strength by pull-off test (*EN 1542*)

**2.2** Essential characteristics for all intended uses in accordance with *EN 1504-4*, Tables 3.1 and 3.2 (manufacturer's declaration of performance)

**2.3** Requirements on essential characteristics for all intended uses in accordance with *EN 1504-5*, Table 3:

- Injectability (*EN 1771*)
- Viscosity (*EN ISO 3219*)

Further essential characteristics in accordance with the manufacturer's technical documentation/declaration of performance

### Module 3: Liquid-applied roof waterproofing kits

The minimum requirements of *EAD 030350-00-0402* Liquid-applied roof waterproofing kits must be maintained. The essential characteristics are to be specified in accordance with the European Technical Assessment (ETA, specification no.).

### Module 4: Reactive products for liquid-applied bridge deck waterproofing kits

The minimum requirements of *ETAG 033* Liquid-applied bridge deck waterproofing kits must be maintained. The essential characteristics are to be specified in accordance with the European Technical Assessment (ETA, specification no.).

## **Module 5: Screed material, floor screeds and decorative floors**

The requirements on essential characteristics according to EN 13813 'Screed material and floor screeds – Screed materials – Properties and requirements' must be maintained. For synthetic resin screeds, these are:

- Bond strength (EN 13892-8)
- Reaction to fire (EN 13501-1)

Further essential characteristics in accordance with the manufacturer's technical documentation/declaration of performance

## **Module 6: Reactive products as an adhesive for tiles**

The requirements on essential characteristics according to EN 12004, must be maintained. These are:

- Tensile adhesion strength after dry storage (EN 12004-2)
- Tensile adhesion strength after water immersion (EN 12004-2)
- Tensile adhesion strength after heat ageing (EN 12004-2)
- Tensile adhesion strength after freeze/thaw cycles (EN 12004-2)

- Open time: Tensile strength (EN 12004-2)

Further essential characteristics in accordance with the manufacturer's technical documentation

## **Module 7: Adhesives and sealants**

Performance characteristics in accordance with the manufacturer's technical documentation / declaration of performance

## **Module 8: Reactive products for watertight covering kits**

The minimum requirements of EAD 030352-00-0503 Liquid applied watertight covering kits for wet room floors and/or walls must be maintained. The essential characteristics are to be specified in accordance with the European Technical Assessment (ETA, specification no.).

## **Module 9: Reactive products for liquid-applied waterproofings**

The minimum requirements of the test principles regarding the issuing of general building authority test certificates for liquid-applied products for waterproofing of buildings (PG-FLK) must be maintained. The characteristics for the proof of usability are to be specified in accordance with the test principles for granting general building authority test certificates for liquid applied polymer products for waterproofing buildings

## **Module 10: Reactive products for waterproofing and/or for pre-treating mineral substrates**

| Name                              | Value      | Unit              |
|-----------------------------------|------------|-------------------|
| Density acc. to EN ISO 2811-1     | 700 - 1800 | kg/m <sup>3</sup> |
| Shore hardness A acc. to ISO 48-4 | >15        |                   |
| Shore hardness D acc. to ISO 48-4 | >5         |                   |
| Viscosity acc. to ISO 3219-2      | <100       | Pas               |

Other performance characteristics in accordance with the manufacturer's technical documentation/declaration of performance

**Module 11: Liquid-applied waterproofing membranes for use beneath ceramic tiling** The minimum requirements on essential characteristics according to EN 14891 - Liquid applied water-impermeable products for use beneath ceramic tiling - Definitions, specifications and test methods- must be maintained. These are:

- Initial tensile adhesion strength
- Tensile adhesion strength after water contact
- Tensile adhesion strength after heat ageing
- Tensile adhesion strength after freeze-thaw cycles
- Waterproofing
- Crack bridging ability

## **Module 12: One-Component Foams**

Physical data of the one-component foam must be indicated in accordance with the respective product standards; these can include, for example:

### 12.1 Window & External Door Sealing & Insulation

Tensile Strength EN 17333-4, Movement Capability EN 17333-4, Curing Pressure EN 17333-2, Thermal conductivity EN 17333-5, Sound Insulation EN ISO 717-1, Post expansion EN 17333-2

### 12.2 Door Installation & Fixation

Shear Strength EN 17333-4, Tensile Strength EN 17333-4, Compression Strength EN 17333-4, Curing pressure EN 17333-2

### 12.3 General Gap Filling

Sagging EN 17333-3 Other performance characteristics in accordance with the manufacturer's technical documents/declaration of performance.

## **Module 13: Sealants for glazing**

Reactive sealants must comply with EN 1279-4 Performance characteristics in accordance with the manufacturer's technical documentation/declaration of performance

## **Module 14: Bonded glazing sealants**

Reactive sealants must comply with RAL-GZ 716 part 2 and ift-Guideline VE-08/4.

Performance characteristics in accordance with the manufacturer's technical documentation/declaration of performance

## **2.4 Delivery status**

Liquid or pasty in containers made of tinplate or plastic packed in separate or combi-containers for the required mixing ratio. Packages containing one kg of product in different types of containers. Sealants in plastic cartridges and foil packs. Typical container sizes contain 10 to 25 kg of material. For major works, vats containing approx. 200 kg or IBCs (intermediate bulk containers) containing 1 tonne or more are also used. The LCA is based on tinplate, plastic and wood packaging.

## **2.5 Base materials/Ancillary materials**

Products based on polyurethane or silane-modified polymer with a VOC content ≤1 % and a castor oil/-

derivatives content ≤10 % usually comprise a reactive polymer and a crosslinking system. The polymer component contains polyether and/or polyester polyols. Crosslinking takes place after installation on site. In the case of two-component systems, this involves the use of pre-polymers and polymers based on typically Methylene diphenyl diisocyanate (MDI), Toluene diisocyanate (TDI), Hexamethylene diisocyanate (HDI) or Isophorone diisocyanate (IPDI). The resin mixing ratio is adjusted according to the stoichiometric requirements. Crosslinking starts directly after the components have been mixed. There are also one-component reactive polymer formulations based on PU or SMP which crosslink in the presence of moisture. They comprise prepolymers based on e.g. MDI, TDI, HDI, IPDI or those with alkoxy-silane groups in the case of SMP formulations. In formulations with aqueous dispersions, dispersible isocyanates are used for crosslinking. The formulations can contain auxiliary materials such as accelerators, catalysts, wetting agents, foam regulators and viscosity regulators for fine-tuning the product features. Typically, the products covered by this EPD contain the following ranges of base materials and auxiliaries:

Polyol component: up to approx. 50 %

Crosslinking component: up to approx. 95 %

SMP component: up to approx. 80 %

Plasticiser: ~ 0-25 %

Additives / Pigments: ~ 0-30 %

Water: ~ 0-60 %

VOC: ≤1 % according to the *Decopaint Directive (mandatory)*

Castor oil and derivatives: ≤10 % (**mandatory**)

These ranges are average values and the composition of products complying with the EPD can deviate from these concentration levels in individual cases. More detailed information is available in the respective manufacturer's documentation (e.g. product data sheets).

*Note: For companies to declare their products within the scope of this EPD it is not sufficient to simply comply with the product composition shown above. The application of this EPD is only possible for member companies of DBC, EFCC, FEICA, and IVK member associations and only for specific formulations with a total score below the declared maximum score for a product group according to the associated guidance document.*

## 1. substances from the “Candidate List of Substances of Very High Concern for Authorisation” (SVHC)

If this product contains substances listed in the candidate list (latest version) exceeding 0.1 percentage by mass, the relevant information can be found in the safety data sheet of the relevant product covered by this model EPD.

## 2. CMR substances in categories 1A and 1B

If this product contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass, the relevant information can be found in the safety data sheet of the relevant product covered by this model EPD.

## 3. Biocide products added to the construction product

If this construction product contains biocide products, the active substances, information on the concentration and/or concentration range, the product

type together with information on their hazardous properties are listed in the safety data sheet of the respective product.

## 2.6 Manufacture

The components of the formulation are usually mixed batch-wise and packaged for delivery.

## 2.7 Environment and health during manufacturing

As a general rule, no other environmental protection measures other than those specified by law are necessary.

## 2.8 Product processing/Installation

Products based on polyurethane or silane-modified polymer, are processed by trowelling/knife-coating or rolling, pouring, spraying or injection. Precautions for safe handling and storage (e.g. air exchange, exhaust ventilation, personal protective measures, precautions required in the handling of isocyanates, conditions for safe storage) must be observed in accordance with the information on the safety data sheet.

## 2.9 Packaging

A detailed description of packaging is provided in section 2.4. Empty containers and clean foils can be recycled.

## 2.10 Condition of use

During the use phase, products based on polyurethane or silane-modified polymer are crosslinked and essentially comprise an inert three-dimensional network. They are long-lasting products which protect our buildings in the form of adhesives, coatings or sealants as well as make an essential contribution in retaining their function and long-term value.

## 2.11 Environment and health during use

### Option 1: Products for applications outside indoor areas with permanent stays by people

During use, the reactive products lose their reactive properties and become inert. No risks are known for water, air and soil if the products are used as designated.

### Option 2: Products for applications inside indoor areas with permanent stays by people

When used in indoor areas with permanent stays by people, evidence of the emission performance of construction products in contact with indoor air must be submitted according to national requirements (see chapter 7). No further influences by emissions on the environment and health are known.

## 2.12 Reference service life

Cured products based on polyurethane or silane-modified polymer fulfil manifold, often specific functions in the construction or refurbishment of building structures. They decisively improve the usability of building structures and significantly extend their original service lives. The anticipated reference service life depends on the specific installation situation and the exposure associated with the product. It can be influenced by weathering as well as mechanical or chemical loads.

## 2.13 Extraordinary effects

### Fire

Even without any special fire safety features, cured products based on polyurethane or silane-modified polymer comply with at least the requirements of EN 13501-1 standard for fire classes E and Efl. In terms of the volumes applied, they have only a marginal influence on the fire performance characteristics (e.g. smoke gas development) of the building structure in which they have been installed. As crosslinked polyurethane systems do not melt or drip, they do not contribute towards spreading fire.

### Water

Cured reactive products based on polyurethane or silane-modified polymer are chemically inert and insoluble in water. They are often used to protect building structures from harmful water ingress or the effects of flooding.

### Mechanical destruction

Mechanical destruction of cured reactive products based on polyurethane or silane-modified polymer does not lead to any decomposition products which are harmful to the environment or health.

### 2.14 Re-use phase

According to present knowledge, no environmentally harmful effects are generally anticipated in landfilling, for example, as a result of de-construction and recycling of building materials with adherent

crosslinked products. If the crosslinked products can be removed from construction products without large effort, thermal recovery is a practical recycling variant on account of their energy content. Minor adhesion is not taken into consideration during disposal. It does not interfere with the disposal/recycling of the remaining components/building materials.

## 2.15 Disposal

Residual material which cannot be used or recycled must be combined at a specified ratio and hardened. Hardened product residue is not special waste. Non-hardened product residue is hazardous waste. Empty, dried containers (free of drops and scraped clean) are directed to the recycling process. Residue must be directed to proper waste disposal taking into consideration the local guidelines. The following waste codes according to the European List of Waste (2000/532/EC) can apply:

### Hardened product residue:

European Waste Catalogue (EWC) code 080112 (waste paint and varnish with the exception of that mentioned in 08 01 11)  
EWC code 080410 (waste adhesives and sealants other than mentioned in 08 04 09)

## 2.16 Further information

More information is available on the manufacturer's product or safety data sheets and on the manufacturer's websites or on request. Valuable technical information is also available on the associations' websites.

## 3. LCA: Calculation rules

### 3.1 Declared Unit

This EPD refers to the declared unit of 1 kg of product based on polyurethane or silane-modified polymer, group 1; applied into the building with a density of 1.25 - 1.8 g/cm<sup>3</sup> in accordance with the IBU PCR part B for reaction resin products.

The results of the Life Cycle Assessment provided in this declaration have been selected from the product with the highest environmental impact (worst-case scenario).

Depending on the application, a corresponding conversion factor such as the density to convert volumetric use to mass must be taken into consideration.

The Declaration type is according to EN 15804: Cradle to gate with options, modules C1–C3, and module D (A1–A3, C, D) and additional modules.

### Declared unit

| Name                      | Value      | Unit              |
|---------------------------|------------|-------------------|
| Declared unit             | 1          | kg                |
| Gross density             | 1.25 - 1.8 | g/cm <sup>3</sup> |
| Conversion factor to 1 kg | -          | -                 |

### 3.2 System boundary

Modules A1, A2 and A3 are taken into consideration in the LCA:

- A1 Production of preliminary products
- A2 Transport to the plant
- A3 Production incl. provision of energy, production of packaging as well as auxiliaries and consumables and waste treatment

- A4 Transport to site

- A5 Installation, product applied into the building during A5 phase operations and packaging disposal. This stage considers VOC emissions during the installation phase. The declared product does not contain substances in the formulation that directly emit (as) VOC, but VOCs are generated by a chemical reaction that are occurring during this phase. The end of life for the packaging material considered is described below:

- Incineration, for materials like plastic and wood.
- Landfill, for inert material like metals (where used).

-C1-C2-C3-D

The building deconstruction (demolition process) takes place in the C1 module which considers energy production and consumption in terms of diesel and all the emissions connected with the fuel-burning process to run the machines. After the demolition, the product is transported to the end-of-life processing (C2 module) where all the impacts related to the transport processes are considered. For precautionary principle and as a worst-case scenario, thermal treatment is the only end-of-life scenario considered. This is modelled by the incineration process (module C3) where the product ends its life cycle.

Module D accounts for potential benefits that are beyond the defined system boundaries. Credits are generated during the incineration of wastes and related electricity produced that are occurring in the A5 module.

### 3.3 Estimates and assumptions

For this EPD formulation and production data defined and collected by FEICA were considered. Production

waste was assumed to be disposed of by incineration without credits as a worst-case.  
An average of steel and plastic containers, and wooden pallets was considered in the LCA.

### 3.4 Cut-off criteria

All raw materials submitted for the formulations and production data were taken into consideration. The manufacture of machinery, plant and other infrastructure required for the production of the products under review was not taken into consideration in the LCA.  
Transport of packaging materials is excluded.

### 3.5 Background data

Data from the *GaBi* database SP40 (2020) was used as background data.

### 3.6 Data quality

Representative products were applied for this EPD and the product in the group displaying the highest environmental impact was selected for calculating the

LCA results. The background data sets used are less than 4 years old.  
Production data and packaging are based on details provided by the manufacturer. The formulation used for evaluation refers to a specific product.  
The data quality of the background data is considered to be good.

### 3.7 Period under review

Representative formulations are valid for 2021.

### 3.8 Allocation

Mass allocation has been applied when primary data have been used and implemented into the LCA model.

### 3.9 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.

The *GaBi* database SP40 (2020) was used.

## 4. LCA: Scenarios and additional technical information

### Characteristic product properties

#### Information on biogenic Carbon

The packaging material contains biogenic carbon content which is presented below.

|              |   |    |
|--------------|---|----|
| Incineration | 1 | kg |
|--------------|---|----|

#### Information on describing the biogenic Carbon Content at factory gate

| Name  | Value | Unit |
|---|-------|------|
| Biogenic Carbon Content in product                | 0     | kg C |
| Biogenic Carbon Content in accompanying packaging | 0.016 | kg C |

#### Transport to the building site (A4)

| Name               | Value   | Unit |
|--------------------|---------|------|
| Transport distance | 1000    | km   |
| Gross weight       | 34 - 40 | t    |
| Payload capacity   | 27      | t    |

#### Assembly (A5)

| Name                                   | Value | Unit |
|--|-------|------|
| Other resources for packaging material | 0.1   | kg   |
| Material loss                          | 0.01  | kg   |

Material loss regards the amount of product not used during the application phase into the building. This amount is 1% of the product, impacts related to the production of this part are charged to the A5 module. This percentage is considered as waste to disposal and impacts of its end of life have been considered in the LCA model and declared in A5.

#### End of life (C1-C3)

| Name                                  | Value | Unit |
|---------------------------------------|-------|------|
| Collected as mixed construction waste | 1     | kg   |

## 5. LCA: Results

### DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = 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                          | X                                   | X        | ND  | ND          | MNR    | MNR         | MNR               | ND                     | ND                    | X   | X         | X                | ND       | X                                  |

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg of product based on polyurethane or silane modified polymer, group 1

| Core Indicator | Unit                               | A1-A3    | A4       | A5       | C1       | C2       | C3       | D         |
|----------------|------------------------------------|----------|----------|----------|----------|----------|----------|-----------|
| GWP-total      | [kg CO <sub>2</sub> -Eq.]          | 4.79E+0  | 5.27E-2  | 1.80E-1  | 2.79E-4  | 1.24E-2  | 2.21E+0  | -9.50E-1  |
| GWP-fossil     | [kg CO <sub>2</sub> -Eq.]          | 4.81E+0  | 5.22E-2  | 9.38E-2  | 2.66E-4  | 1.18E-2  | 2.21E+0  | -9.47E-1  |
| GWP-biogenic   | [kg CO <sub>2</sub> -Eq.]          | -3.57E-2 | 1.52E-4  | 8.62E-2  | 1.24E-5  | 5.42E-4  | 8.82E-5  | -2.23E-3  |
| GWP-luluc      | [kg CO <sub>2</sub> -Eq.]          | 4.50E-3  | 4.22E-4  | 4.84E-5  | 6.39E-9  | 2.79E-7  | 2.08E-5  | -6.66E-4  |
| ODP            | [kg CFC11-Eq.]                     | 6.76E-9  | 6.27E-18 | 6.76E-11 | 2.84E-20 | 1.24E-18 | 2.62E-16 | -9.93E-15 |
| AP             | [mol H <sup>+</sup> -Eq.]          | 1.02E-2  | 1.56E-4  | 1.29E-4  | 3.60E-6  | 3.73E-5  | 1.31E-3  | -1.33E-3  |
| EP-freshwater  | [kg P-Eq.]                         | 1.93E-5  | 1.59E-7  | 1.98E-7  | 5.75E-11 | 2.51E-9  | 4.40E-8  | -1.23E-6  |
| EP-marine      | [kg N-Eq.]                         | 2.67E-3  | 6.96E-5  | 3.50E-5  | 1.63E-6  | 1.72E-5  | 6.31E-4  | -3.43E-4  |
| EP-terrestrial | [mol N-Eq.]                        | 2.93E-2  | 7.80E-4  | 4.11E-4  | 1.79E-5  | 1.89E-4  | 7.26E-3  | -3.68E-3  |
| POCP           | [kg NMVOC-Eq.]                     | 9.47E-3  | 1.38E-4  | 7.20E-3  | 4.91E-6  | 3.39E-5  | 1.62E-3  | -9.87E-4  |
| ADPE           | [kg Sb-Eq.]                        | 8.18E-6  | 3.74E-9  | 8.22E-8  | 8.06E-12 | 3.52E-10 | 4.65E-9  | -1.56E-7  |
| ADPF           | [MJ]                               | 1.05E+2  | 6.94E-1  | 1.11E+0  | 3.81E-3  | 1.66E-1  | 5.87E-1  | -1.61E+1  |
| WDP            | [m <sup>3</sup> world-Eq deprived] | 1.34E+0  | 4.66E-4  | 2.69E-2  | 5.27E-7  | 2.30E-5  | 2.17E-1  | -9.86E-2  |

Caption GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

### RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg of product based on polyurethane or silane modified polymer, group 1

| Indicator | Unit              | A1-A3   | A4      | A5       | C1      | C2      | C3       | D        |
|-----------|-------------------|---------|---------|----------|---------|---------|----------|----------|
| PERE      | [MJ]              | 6.67E+0 | 3.90E-2 | 6.65E-1  | 1.20E-5 | 5.25E-4 | 8.23E-2  | -3.52E+0 |
| PERM      | [MJ]              | 5.85E-1 | 0.00E+0 | -5.85E-1 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| PERT      | [MJ]              | 7.26E+0 | 3.90E-2 | 7.99E-2  | 1.20E-5 | 5.25E-4 | 8.23E-2  | -3.52E+0 |
| PENRE     | [MJ]              | 8.33E+1 | 6.95E-1 | 1.63E+0  | 3.81E-3 | 1.67E-1 | 2.21E+1  | -1.61E+1 |
| PENRM     | [MJ]              | 2.20E+1 | 0.00E+0 | -5.20E-1 | 0.00E+0 | 0.00E+0 | -2.15E+1 | 0.00E+0  |
| PENRT     | [MJ]              | 1.05E+2 | 6.95E-1 | 1.11E+0  | 3.81E-3 | 1.67E-1 | 5.87E-1  | -1.61E+1 |
| SM        | [kg]              | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| RSF       | [MJ]              | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| NRSF      | [MJ]              | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| FW        | [m <sup>3</sup> ] | 4.03E-2 | 4.52E-5 | 7.22E-4  | 2.16E-8 | 9.41E-7 | 5.11E-3  | -4.08E-3 |

Caption PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

### RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 kg of product based on polyurethane or silane modified polymer, group 1

| Indicator | Unit | A1-A3   | A4      | A5      | C1       | C2       | C3       | D        |
|-----------|------|---------|---------|---------|----------|----------|----------|----------|
| HWD       | [kg] | 1.12E-5 | 3.23E-8 | 1.12E-7 | 3.70E-13 | 1.62E-11 | 3.34E-10 | -6.41E-9 |
| NHWD      | [kg] | 1.66E-1 | 1.06E-4 | 4.75E-2 | 3.90E-7  | 1.70E-5  | 1.11E-2  | -7.44E-3 |
| RWD       | [kg] | 2.34E-3 | 8.60E-7 | 2.54E-5 | 4.09E-9  | 1.79E-7  | 2.37E-5  | -1.20E-3 |
| CRU       | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0  |
| MFR       | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0  |
| MER       | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0  |
| EEE       | [MJ] | 0.00E+0 | 0.00E+0 | 2.12E-1 | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0  |
| EET       | [MJ] | 0.00E+0 | 0.00E+0 | 3.86E-1 | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0  |

Caption HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

### RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 kg of product based on polyurethane or silane modified polymer, group 1

| Indicator | Unit                | A1-A3 | A4 | A5 | C1 | C2 | C3 | D  |
|-----------|---------------------|-------|----|----|----|----|----|----|
| PM        | [Disease Incidence] | ND    | ND | ND | ND | ND | ND | ND |
| IRP       | [kBq U235-Eq.]      | ND    | ND | ND | ND | ND | ND | ND |
| ETP-fw    | [CTUe]              | ND    | ND | ND | ND | ND | ND | ND |
| HTP-c     | [CTUh]              | ND    | ND | ND | ND | ND | ND | ND |
| HTP-nc    | [CTUh]              | ND    | ND | ND | ND | ND | ND | ND |
| SQP       | [·]                 | ND    | ND | ND | ND | ND | ND | ND |

Caption PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Potential Human exposure efficiency relative to U235, Disclaimer 1 – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and (from) some construction materials is also not measured by this indicator.

ADP minerals & metals, ADP fossil, WDP, ETF-fw, HTP-c, HTP-nc, SQP, Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

**Additional environmental impact indicators** (suggested by EN15804, table 4) are not declared in the EPD. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high and as there is limited experience with the indicator (see ILCD classification in EN 15804, table 5). For this reason, results based on these indicators are not considered suitable for a decision-making process and are thus not declared in the EPD.

## 6. LCA: Interpretation

The majority of impacts are associated with the production phase (A1-A3). The most significant contribution to the production phase impacts is the upstream production of raw materials as the main driver. Another substantial contributor in the production phase, in the category of Abiotic depletion potential for nonfossil resources (ADPminerals& metals), is the steel sheet used as a packaging material. Emissions associated with the manufacturing of products also have some influence on the Formation potential of tropospheric ozone (POCP) in the production phase. In all EPDs, CO<sub>2</sub> is the most important contributor to Global Warming Potential (GWP). For the Acidification Potential (AP), NOx and SO<sub>2</sub> contribute the largest share. In some cases, HCl in water also impacts AP due to the use of TiO<sub>2</sub> as a pigment.

The majority of life cycle energy consumption takes place during the production phase (A1-A3). Significant contributions to Primary Energy Demand – Non-renewable (PENRT) come from the energy resources used in the production of raw materials. The largest contributor to Primary Energy Demand – Renewable

(PERT) impacts comes from the consumption of renewable energy resources required for the generation and supply of electricity. It should be noted that Primary Energy Demand – Renewable (PERT) generally represents a small percentage of the production phase primary energy demand with the bulk of the demand coming from non-renewable energy resources.

Transportation to the construction site (A4) and the installation process (A5) make a low contribution to all impacts.

The installation phase influences mainly the Photochemical ozone formation indicator, due to the emission of VOC during the operations. These emissions are not directly related to the pre-products in the resins, but they are related to the reaction products between pre-products and air components (water and oxygen).

The end-of-life phases influence climate change indicators, due to the incineration processes occurring in the C3 module, the process used for modelling the thermal treatment process of the resin.

## 7. Requisite evidence

### VOC

Special tests and evidence have not been carried out or provided within the framework of drawing up this Model EPD. Some member states require special documentation on VOC emissions into indoor air for specific areas of application. This documentation, as well as documentation for voluntary VOC labelling, has to be provided separately and is specific for product in question.

Evidence pertaining to VOC emissions shall show

- either an attestation of compliance with,
- or documentation of test data that are required in

any of the existing regulations or in any of the existing voluntary labelling programs for low-emitting products, as far as these

- (1) include limits for the parameters TVOC, TSVOC, carcinogens, formaldehyde, acetaldehyde, LCI limits for individual substances (including but not limited to the European list of harmonized LCIs), and the R value;
- (2) base their test methods on EN 16516;
- (3) perform testing and apply the limits after 28 days of storage in a ventilated test chamber, under the conditions specified in EN 16516; some regulations

and programs also have limits after 3 days, on top of the 28 days limits;  
(4) express the test results as air concentrations in the European Reference Room, as specified in EN 16516.

Examples of such regulations are the *Belgian Royal Decree C-2014/24239*, or the *German AgBB/ABG*. Examples of such voluntary labelling programs are *EMICODE*, *Blue Angel* or *Indoor Air Comfort*.

Relevant test results shall be produced either by an ISO 17025 accredited commercial test lab or by a qualified internal test lab of the manufacturer.

Examples for the applied limits after 28 days of storage in a ventilated test chamber are:

- TVOC: 1000 µg/m<sup>3</sup>

- TSVOC: 100 µg/m<sup>3</sup>
- Each carcinogen: 1 µg/m<sup>3</sup>
- Formaldehyde: 100 µg/m<sup>3</sup>
- LCI: different per substance involved
- R value: 1 (meaning that, in total, 100 % of the combined LCI values must not be exceeded).

Informative Annexes (2 tables):

Table 1 shown below is an overview of the most relevant regulations and specifications as of October 2021, as regards requirements after 3 days of storage in a ventilated test chamber.

Table 2 provides an overview of the most relevant regulations and specifications as of October 2021, as regards requirements after 28 days of storage in a ventilated test chamber. Some details may be missing in the table due to lack of space. Values given represent maximum values/limits.

|                             | TVOC<br>µg/m <sup>3</sup> | Sum of<br>carcinogens.<br>C1A,CA2<br>µg/m <sup>3</sup> | Formaldehyde<br>µg/m <sup>3</sup> | Acetaldehyde<br>µg/m <sup>3</sup> | Sum of<br>Form- and<br>Acetaldehyde |
|-----------------------------|---------------------------|--|-----------------------------------|-----------------------------------|-------------------------------------|
| German AgBB/ABG regulation  | 10 000                    | 10   | -/-                               | -/-                               | -/-                                 |
| Belgian regulation          | 10 000                    | 10   | -/-                               | -/-                               | -/-                                 |
| EMICODE EC1                 | 1 000                     | 10   | 50                                | 50                                | 50 ppb                              |
| EMICODE EC1 <sup>PLUS</sup> | 750                       | 10   | 50                                | 50                                | 50 ppb                              |

|                                   | TVOC<br>µg/m <sup>3</sup>  | TSVOC<br>µg/m <sup>3</sup> | Each<br>carcinogen<br>C1A,CA2<br>µg/m <sup>3</sup> | Formalde-<br>hyde<br>µg/m <sup>3</sup> | Acetalde-<br>hyde<br>µg/m <sup>3</sup> | LCI                    | R<br>value | Specials                         | Sum of<br>non-LCI &<br>non-<br>identified<br>µg/m <sup>3</sup> |
|-----------------------------------|----------------------------|----------------------------|--|--|--|------------------------|------------|----------------------------------|--|
| Belgian<br>regulation             | 1000                       | 100                        | 1  | 100                                    | 200                                    | Belgian<br>list        | 1          | Toluene 300<br>µg/m <sup>3</sup> | -/-  |
| French<br>regulations<br>class A+ | 1000                       | -/-                        | -/-  | 10                                     | 200                                    | -/-                    | -/-        | List of 8<br>VOCs,<br>4 CMR      | -/-  |
| French<br>regulations<br>class A  | 1500                       | -/-                        | -/-  | 60                                     | 300                                    | -/-                    | -/-        | List of 8<br>VOCs,<br>4 CMR      | -/-  |
| French<br>regulations<br>class B  | 2000                       | -/-                        | -/-  | 120                                    | 400                                    | -/-                    | -/-        | List of 8<br>VOCs,<br>4 CMR      | -/-  |
| French<br>regulations<br>class C  | >2000                      | -/-                        | -/-  | >120                                   | >400                                   | -/-                    | -/-        | List of 8<br>VOCs,<br>4 CMR      | -/-  |
| German<br>DIBt/AgBB<br>regulation | 1000                       | 100                        | 1  | 100                                    | 300                                    | German<br>AgBB<br>list | 1          | -/-                              | 100  |
| EMICODE<br>EC1                    | 100                        | 50                         | 1<br>(after 3<br>days)                             | (after 3<br>days)                      | -/-                                    | -/-                    | -/-        | -/-                              | -/-  |
| EMICODE<br>EC1 <sup>PLUS</sup>    | 60                         | 40                         | 1<br>(after 3<br>days)                             | (after 3<br>days)                      | German<br>AgBB<br>list                 | 1                      | -/-        | 40                               |  |
| Finnish M1,<br>sealants           | 20                         | -/-                        | 1  | 10                                     | 300                                    | EU LCI<br>list         | -/-        | Ammonia,<br>odour                | -/-  |
| Finnish M1,<br>adhesives          | 200<br>µg/m <sup>2</sup> h | -/-                        | 5 µg/m <sup>2</sup> h                              | 50<br>µg/m <sup>2</sup> h              | 300                                    | EU LCI<br>list         | -/-        | Ammonia,<br>odour                | -/-  |

## 8. References

### ETAG 033

Liquid applied bridge deck waterproofing kits

ISO 48-4

ISO 48-4:2018, Rubber, vulcanized or thermoplastic - Determination of hardness- Part 4: Indentation hardness by durometer method (Shore hardness)

#### **EN ISO 717-1**

EN ISO 717-1:2020 Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation

#### **EN 1062-3**

EN 1062-3:2008-04, Paints and varnishes - Coating materials and coating systems for exterior masonry and concrete - Part 3: Determination of liquid water permeability

#### **EN 1062-6**

EN 1062-6:2002-10, Paints and varnishes - Coating materials and coating systems for exterior masonry and concrete - Part 6: Determination of carbon dioxide permeability

#### **EN 1279-4**

EN 1279-4:2002 Glass in building - Insulating glass units - Part 4: Methods of test for the physical attributes of edge seals

#### **EN 1504-2**

EN 1504-2:2004-12, Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 2: Surface protection systems for concrete

#### **EN 1504-4**

EN 1504-4:2004-11, Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity- Part 4: Structural bonding

#### **EN 1504-5**

EN 1504-5:2004-12, Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 5: Concrete injection

#### **EN 1542**

EN 1542:1999-07, Products and systems for the protection and repair of concrete structures - Test methods - Measurement of bond strength by pull-off

#### **EN 1771**

EN 1771:2004-11, Products and systems for the protection and repair of concrete structures - Test methods - Determination of injectability and splitting test

#### **ISO 2811-1**

ISO 2811-1:2016, Paints and varnishes - Determination of density - Part 1: Pycnometer method

#### **EN ISO 3219**

EN ISO 3219:1994-10, Plastics - Polymers/resins in the liquid state or as emulsions or dispersions - Determination of viscosity using a rotational viscometer with defined shear rate

#### **ISO 3219-2**

ISO 3219-2:2021, Rheology - Part 2: General principles of rotational and oscillatory rheometry

#### **EN ISO 7783**

EN ISO 7783:2019-02, Paints and varnishes - Determination of water-vapour transmission properties - Cup method

#### **EN 12004**

EN 12004:2012, Adhesives for ceramic tiles

#### **EN 12004-1**

EN 12004-1:2017, Adhesives for ceramic tiles – Part 1: Requirements, assessment and verification of constancy of performance, classification and marking

#### **EN 12004-2**

EN 12004-2:2017, Adhesives for ceramic tiles - Part 2: Test methods

#### **EN 13501-1**

EN 13501-1:2018, Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

#### **EN 13813**

EN 13813:2002-10, Screed material and floor screeds - Screed materials - Properties and requirements

#### **EN 13892-8**

EN 13892:2003-02, Methods of test for screed materials - Part 8: Determination of bond strength

#### **ISO 14025**

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

#### **EN 14891**

EN 14891:2012-04, Liquid applied water impermeable products for use beneath ceramic tiling - Definitions, specifications and test methods

#### **EN 15804**

EN 15804:2019+A2, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

#### **EN 16516**

EN 16516:2017  
Construction products - Assessment of release of dangerous substances - Determination of emissions into indoor air

#### **EN ISO 17025**

EN ISO 17025:2018-03  
General requirements for the competence of testing and calibration laboratories

#### **EN ISO 17178**

EN ISO 17178:2020-06, Adhesives - Adhesives for bonding parquet to subfloor - Test methods and minimum requirements

#### **EN 17333-2**

EN 17333-2:2020+AC:2020, Characterisation of one component foam - Part 2: Expansion characteristics

#### **EN 17333-3**

EN 17333-3:2020, Characterisation of one component foam - Part 3: Application

#### **EN 17333-4**

EN 17333-4:2020, Characterisation of one component foam - Part 4: Mechanical strength

**EN 17333-5**

EN 17333-5:2020, Characterisation of one component foam - Part 5: Insulation

**EN ISO 22636**

EN ISO 22636:2020, Adhesives - Adhesives for floor coverings - Requirements for mechanical and electrical performance

**EAD 030350-00-0402**

EAD 030350-00-0402:2018-08, Liquid Applied Roof Waterproofing Kits

**EAD 030352-00-0503**

EAD 030352-00-0503:2019-01, Liquid applied watertight covering kits for wet room floors and/or walls

**2000/532/EC**

Commission decision dated 3 May 2000 replacing decision 94/3/EC on a waste directory in accordance with Article 1 a) of Council Directive 75/442/EEC on waste and Council decision 94/904/EC on a directory of hazardous waste in terms of Article 1, paragraph 4 of Directive 91/689/EEC on hazardous waste

**Belgian Royal Decree C-2014/24239**

Belgisch Staatsblad 8 MEI 2014, p. 60603. — Koninklijk besluit tot vaststelling van de drempelniveaus voor de emissies naar het binnenmilieu van bouwproducten voor bepaalde geoogde gebruiken

**Blue Angel**

Environmental label organised by the federal government of Germany [www.blauer-engel.de](http://www.blauer-engel.de)

**CPR**

CPR Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

**Decopaint Directive**

Directive 2004/42/CE of the European Parliament and the council of 21 April 2004 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC

**EMICODE**

EMICODE, GEV – Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e. V. ([pub.](http://www.emicode.de))[www.emicode.de](http://www.emicode.de)

**GaBi 10 software & documentation**

Data base for Life Cycle Engineering LBP, University of Stuttgart and Sphera, documentation of GaBi 10

data sets <http://documentation.gabi-software.com/>, 2020

**German AgBB**

Committee for Health-related Evaluation of Building Products: health-related evaluation of emissions of volatile organic compounds (VOC and SVOC) from building products; status: June 2012  
[www.umweltbundesamt.de/produkte/bauprodukte/agb\\_b.htm](http://www.umweltbundesamt.de/produkte/bauprodukte/agb_b.htm)

**IBU 2021**

Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V. EPD programme. Version 2.0. Berlin: Institut Bauen und Umwelt e.V., 2021  
[www.ibu-epd.com](http://www.ibu-epd.com)

**ift-Guideline VE-08/4**

ift-Guideline VE-08/4:2017, Beurteilungsgrundlage für geklebte Verglasungssysteme

**Indoor Air Comfort**

Product certification by Eurofins, Hamburg, Germany  
[www.eurofins.com](http://www.eurofins.com)

**PCR Part A**

Product Category Rules for Building-Related Products and Services, Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project report, Version 1.1, Institut Bauen und Umwelt e.V., 2021-01

**PCR Part B**

Product Category Rules for Construction Products, Part B: Reaction resin products, Institut Bauen und Umwelt e.V., 2019-01

**RAL-GZ 716**

RAL-GZ 716:2019-04 part 2, Kunststoff-Fensterprofilsysteme - Gütesicherung

**REACH**

Directive (EG) No. 1907/2006 of the European Parliament and of the Council dated 18 December 2006 on the registration, evaluation, approval and restriction of chemical substances (REACH), for establishing a European Agency for chemical substances, for amending Directive 1999/45/EC and for annulment of Directive (EEC) No. 793/93 of the Council, Directive (EC) No. 1488/94 of the Commission, Guideline 76/769/EEC of the Council and Guidelines 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC of the Commission.

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# Declaration of conformity for products with Model EPDs

The Association of Deutsche Bauchemie e.V., of which Hermann Otto GmbH is a member, has developed so-called Model Environmental Product Declarations (Model EPDs) and had them independently verified by the Institut Bauen und Umwelt e.V. (IBU).

These IBU verified Model EPDs have been made publicly available by Deutsch Bauchemie and IBU.

Based on the product formulations it was checked if our products were covered by the Model EPDs.

This Declaration confirms that the product

## OTTOCOLL® M 550

is covered by the attached Model EPD

Products based on polyurethane or silane-modified polymer, group 1  
EPD-FEI-20220021-IBG1-EN

This means that the Life Cycle Assessment data and the remaining content of the attached Model EPD apply to the above mentioned product and may thus be used for the evaluation of the sustainability of buildings where the product is applied.

Hermann Otto GmbH

Fridolfing, 25.05.2023

# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

|                          |                                      |
|--------------------------|--------------------------------------|
| Owner of the Declaration | DBC, EFCC, FEICA, IVK                |
| Programme holder         | Institut Bauen und Umwelt e.V. (IBU) |
| Publisher                | Institut Bauen und Umwelt e.V. (IBU) |
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| Issue date               | 01.06.2022                           |
| Valid to                 | 31.05.2027                           |

## Products based on polyurethane or silane-modified polymer, group 1

DBC - Deutsche Bauchemie e.V.

EFCC - European Federation for Construction Chemicals

FEICA - Association of the European Adhesive and Sealant Industry

IVK - Industrieverband Klebstoffe e.V.

[www.ibu-epd.com](http://www.ibu-epd.com) | <https://epd-online.com>



## 1. General Information

DBC - Deutsche Bauchemie e.V.

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**Programme holder**

IBU – Institut Bauen und Umwelt e.V.

Hegelplatz 1

10117 Berlin

Germany

Products based on polyurethane or silane-modified polymer, group 1

**Declaration number**

EPD-FEI-20220021-IBG1-EN

**This declaration is based on the product category rules:**

Reaction resin products, 07.2014

(PCR checked and approved by the SVR)

**Issue date**

01.06.2022

**Valid to**

31.05.2027

**Owner of the declaration**

DBC, Mainzer Landstr. 55, D-60329 Frankfurt a.M.

EFCC, 172 Boulevard du Triomphe, B-1160 Brussels

FEICA, Rue Belliard 40, B-1040 Brussels

IVK, Völklingerstr. 4, D-40219 Düsseldorf

**Declared product / declared unit**

1 kg product based on polyurethane or silane-modified polymer; density 1.25 - 1.8 g/cm<sup>3</sup>

**Scope:**

This verified EPD entitles the holder to bear the symbol of the Institut Bauen und Umwelt e.V. It exclusively applies for products produced in Europe and for a period of five years from the date of issue. This EPD may be used by members of DBC, EFCC, FEICA and IVK and their members provided it has been proven that the respective product can be represented by this EPD. For this purpose a guideline is available at the secretariats of the four associations. The members of the associations are listed on the respective websites.

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 |
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|--|
| <input type="checkbox"/> internally <input checked="" type="checkbox"/> externally |
|--|

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

Dr. Alexander Röder  
(Managing Director Institut Bauen und Umwelt e.V.))

Matthias Schulz  
(Independent verifier)

## 2. Product

**2.1 Product description/Product definition**

This EPD comprises reactive products based on polyurethane (PU) or silane-modified polymer (SMP) with a volatile organic compound (VOC) content ≤1 % (VOC definition according to Decopaint Directive) and a castor oil/-derivatives content ≤ 10%. The one- or two-component reactive PU products are manufactured using polyols and isocyanates. Reactive products based on SMP polymers are usually manufactured as a one-component system from polyols and alkoxy silane in a preliminary stage. The aqueous systems consist of (a) dispersion and are crosslinked by a dispersible isocyanate. The products

fulfil manifold, often specific, functions in the construction, furnishing and repair of buildings. The product displaying the highest environmental impacts was used as a representative product for calculating the Life Cycle Assessment results (worst-case approach).

For the placing on the market in the European Union/European Free Trade Association (EU/EFTA) with the exception of Switzerland) products falling under Regulation (EU) No 305/2011 (CPR) need a Declaration of Performance taking into consideration either the relevant harmonised European standard or

the European Technical Assessment and the CE marking. For the application and use of the products the respective national provisions apply.

## 2.2 Application

Products based on polyurethane or silane-modified polymer, group 1, are used for the following applications:

### Module 1: Adhesives for parquet and floor coverings

Parquet adhesives in accordance with *EN ISO 17178* for wooden and parquet floors and flooring adhesives in accordance with *EN ISO 22636* for floor coverings

### Module 2: Reactive products for protecting and repairing concrete structures

Products for increasing the durability of concrete and reinforced concrete structures as well as for new concrete and for maintenance and repair work (requirements 2.1), products for structural bonding of strengthening materials to an existing concrete structure (requirements 2.2) and products for concrete injection for filling cracks, voids and interstices in concrete (requirements 2.3)

### Module 3: Liquid-applied roof waterproofing kits

Reactive products for waterproofing roof constructions which are applied on site

### Module 4: Reactive products for liquid-applied bridge deck waterproofing kits

Products for liquid-applied waterproofing for use on concrete bridge decks

### Module 5: Screed material, floor screeds and decorative floors

Products for screed/synthetic resin screed for use in floor constructions

### Module 6: Reactive products as an adhesive for tiles

Tile adhesives for internal and external tile installations on walls, floors and ceilings

### Module 7: Adhesives and sealants

Reactive products for use as:

- Structural and repair adhesives
- Surface and joint sealants

Applications in accordance with the manufacturer's technical documentation/declaration of performance

### Module 8: Reactive products for watertight covering kits

Products for waterproofing floors and/or walls in wet rooms inside buildings

### Module 9: Reactive products for liquid-applied waterproofing

Liquid applied products for waterproofing of buildings

### Module 10: Reactive products for waterproofing and/or for pre-treating mineral substrates

Applications in accordance with the manufacturer's technical documentation

### Module 11: Liquid-applied waterproofing membranes for use beneath ceramic tiling

### Module 12: One-component foam (OCF)

One component foam in a can is a one-component,

self-expanding, ready to use polyurethane foam used for various construction applications. It consists of a low viscous semi-fluid in a can that leaves the can as a froth and immediately forms a polyurethane foam.

**12.1 Window & External Door Sealing & Insulation:**  
Installing mechanically fixed external windows and doors with an OCF, as part of a system including sealants and tapes

**12.2 Door Installation & Fixation:**

Fixing interior doors with an OCF

**12.3 General Gap Filling:**

Filling of regularly and irregularly shaped spaces between at least two surfaces made of typical building materials with a one-component foam (OCF)

### Module 13: Sealants for glazing

Two-component reactive sealants are to be used as the second barrier of the structural hermetic seal in insulating glass units.

### Module 14: Bonded glazing sealants

One- and two-component reactive sealants are used for the bonding of insulating glass units in the window frame.

## 2.3 Technical Data

The density of the products is between 1,25 and 1,8 g/cm<sup>3</sup>, other relevant technical data can be found in the manufacturer's technical documentation.

### Module 1: Reactive products as adhesive for parquet and floor coverings

The minimum requirements of *EN ISO 17178* and *EN ISO 22636* must be maintained.

### Module 2: Reactive products for protecting and repairing concrete structures

**2.1** The requirements on essential characteristics for all intended uses in accordance with *EN 1504-2*, Tables 1 and 5 must be maintained. These are:

- Permeability to CO<sub>2</sub> (*EN 1062-6*)
- Water vapour permeability (*EN ISO 7783-1/-2*)
- Capillary absorption and permeability to water (*EN 1062-3*)
- Adhesive strength by pull-off test (*EN 1542*)

**2.2** Essential characteristics for all intended uses in accordance with *EN 1504-4*, Tables 3.1 and 3.2 (manufacturer's declaration of performance)

**2.3** Requirements on essential characteristics for all intended uses in accordance with *EN 1504-5*, Table 3:

- Injectability (*EN 1771*)
- Viscosity (*EN ISO 3219*)

Further essential characteristics in accordance with the manufacturer's technical documentation/declaration of performance

### Module 3: Liquid-applied roof waterproofing kits

The minimum requirements of *EAD 030350-00-0402* Liquid-applied roof waterproofing kits must be maintained. The essential characteristics are to be specified in accordance with the European Technical Assessment (ETA, specification no.).

### Module 4: Reactive products for liquid-applied bridge deck waterproofing kits

The minimum requirements of *ETAG 033* Liquid-applied bridge deck waterproofing kits must be maintained. The essential characteristics are to be specified in accordance with the European Technical Assessment (ETA, specification no.).

## **Module 5: Screed material, floor screeds and decorative floors**

The requirements on essential characteristics according to EN 13813 'Screed material and floor screeds – Screed materials – Properties and requirements' must be maintained. For synthetic resin screeds, these are:

- Bond strength (EN 13892-8)
- Reaction to fire (EN 13501-1)

Further essential characteristics in accordance with the manufacturer's technical documentation/declaration of performance

## **Module 6: Reactive products as an adhesive for tiles**

The requirements on essential characteristics according to EN 12004, must be maintained. These are:

- Tensile adhesion strength after dry storage (EN 12004-2)
- Tensile adhesion strength after water immersion (EN 12004-2)
- Tensile adhesion strength after heat ageing (EN 12004-2)
- Tensile adhesion strength after freeze/thaw cycles (EN 12004-2)

- Open time: Tensile strength (EN 12004-2)

Further essential characteristics in accordance with the manufacturer's technical documentation

## **Module 7: Adhesives and sealants**

Performance characteristics in accordance with the manufacturer's technical documentation / declaration of performance

## **Module 8: Reactive products for watertight covering kits**

The minimum requirements of EAD 030352-00-0503 Liquid applied watertight covering kits for wet room floors and/or walls must be maintained. The essential characteristics are to be specified in accordance with the European Technical Assessment (ETA, specification no.).

## **Module 9: Reactive products for liquid-applied waterproofings**

The minimum requirements of the test principles regarding the issuing of general building authority test certificates for liquid-applied products for waterproofing of buildings (PG-FLK) must be maintained. The characteristics for the proof of usability are to be specified in accordance with the test principles for granting general building authority test certificates for liquid applied polymer products for waterproofing buildings

## **Module 10: Reactive products for waterproofing and/or for pre-treating mineral substrates**

| Name                              | Value      | Unit              |
|-----------------------------------|------------|-------------------|
| Density acc. to EN ISO 2811-1     | 700 - 1800 | kg/m <sup>3</sup> |
| Shore hardness A acc. to ISO 48-4 | >15        |                   |
| Shore hardness D acc. to ISO 48-4 | >5         |                   |
| Viscosity acc. to ISO 3219-2      | <100       | Pas               |

Other performance characteristics in accordance with the manufacturer's technical documentation/declaration of performance

**Module 11: Liquid-applied waterproofing membranes for use beneath ceramic tiling** The minimum requirements on essential characteristics according to EN 14891 - Liquid applied water-impermeable products for use beneath ceramic tiling - Definitions, specifications and test methods- must be maintained. These are:

- Initial tensile adhesion strength
- Tensile adhesion strength after water contact
- Tensile adhesion strength after heat ageing
- Tensile adhesion strength after freeze-thaw cycles
- Waterproofing
- Crack bridging ability

## **Module 12: One-Component Foams**

Physical data of the one-component foam must be indicated in accordance with the respective product standards; these can include, for example:

### 12.1 Window & External Door Sealing & Insulation

Tensile Strength EN 17333-4, Movement Capability EN 17333-4, Curing Pressure EN 17333-2, Thermal conductivity EN 17333-5, Sound Insulation EN ISO 717-1, Post expansion EN 17333-2

### 12.2 Door Installation & Fixation

Shear Strength EN 17333-4, Tensile Strength EN 17333-4, Compression Strength EN 17333-4, Curing pressure EN 17333-2

### 12.3 General Gap Filling

Sagging EN 17333-3 Other performance characteristics in accordance with the manufacturer's technical documents/declaration of performance.

## **Module 13: Sealants for glazing**

Reactive sealants must comply with EN 1279-4 Performance characteristics in accordance with the manufacturer's technical documentation/declaration of performance

## **Module 14: Bonded glazing sealants**

Reactive sealants must comply with RAL-GZ 716 part 2 and ift-Guideline VE-08/4.

Performance characteristics in accordance with the manufacturer's technical documentation/declaration of performance

## **2.4 Delivery status**

Liquid or pasty in containers made of tinplate or plastic packed in separate or combi-containers for the required mixing ratio. Packages containing one kg of product in different types of containers. Sealants in plastic cartridges and foil packs. Typical container sizes contain 10 to 25 kg of material. For major works, vats containing approx. 200 kg or IBCs (intermediate bulk containers) containing 1 tonne or more are also used. The LCA is based on tinplate, plastic and wood packaging.

## **2.5 Base materials/Ancillary materials**

Products based on polyurethane or silane-modified polymer with a VOC content ≤1 % and a castor oil/-

derivatives content ≤10 % usually comprise a reactive polymer and a crosslinking system. The polymer component contains polyether and/or polyester polyols. Crosslinking takes place after installation on site. In the case of two-component systems, this involves the use of pre-polymers and polymers based on typically Methylene diphenyl diisocyanate (MDI), Toluene diisocyanate (TDI), Hexamethylene diisocyanate (HDI) or Isophorone diisocyanate (IPDI). The resin mixing ratio is adjusted according to the stoichiometric requirements. Crosslinking starts directly after the components have been mixed. There are also one-component reactive polymer formulations based on PU or SMP which crosslink in the presence of moisture. They comprise prepolymers based on e.g. MDI, TDI, HDI, IPDI or those with alkoxy-silane groups in the case of SMP formulations. In formulations with aqueous dispersions, dispersible isocyanates are used for crosslinking. The formulations can contain auxiliary materials such as accelerators, catalysts, wetting agents, foam regulators and viscosity regulators for fine-tuning the product features. Typically, the products covered by this EPD contain the following ranges of base materials and auxiliaries:

Polyol component: up to approx. 50 %

Crosslinking component: up to approx. 95 %

SMP component: up to approx. 80 %

Plasticiser: ~ 0-25 %

Additives / Pigments: ~ 0-30 %

Water: ~ 0-60 %

VOC: ≤1 % according to the *Decopaint Directive (mandatory)*

Castor oil and derivatives: ≤10 % (**mandatory**)

These ranges are average values and the composition of products complying with the EPD can deviate from these concentration levels in individual cases. More detailed information is available in the respective manufacturer's documentation (e.g. product data sheets).

*Note: For companies to declare their products within the scope of this EPD it is not sufficient to simply comply with the product composition shown above. The application of this EPD is only possible for member companies of DBC, EFCC, FEICA, and IVK member associations and only for specific formulations with a total score below the declared maximum score for a product group according to the associated guidance document.*

## 1. substances from the “Candidate List of Substances of Very High Concern for Authorisation” (SVHC)

If this product contains substances listed in the candidate list (latest version) exceeding 0.1 percentage by mass, the relevant information can be found in the safety data sheet of the relevant product covered by this model EPD.

## 2. CMR substances in categories 1A and 1B

If this product contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass, the relevant information can be found in the safety data sheet of the relevant product covered by this model EPD.

## 3. Biocide products added to the construction product

If this construction product contains biocide products, the active substances, information on the concentration and/or concentration range, the product

type together with information on their hazardous properties are listed in the safety data sheet of the respective product.

## 2.6 Manufacture

The components of the formulation are usually mixed batch-wise and packaged for delivery.

## 2.7 Environment and health during manufacturing

As a general rule, no other environmental protection measures other than those specified by law are necessary.

## 2.8 Product processing/Installation

Products based on polyurethane or silane-modified polymer, are processed by trowelling/knife-coating or rolling, pouring, spraying or injection. Precautions for safe handling and storage (e.g. air exchange, exhaust ventilation, personal protective measures, precautions required in the handling of isocyanates, conditions for safe storage) must be observed in accordance with the information on the safety data sheet.

## 2.9 Packaging

A detailed description of packaging is provided in section 2.4. Empty containers and clean foils can be recycled.

## 2.10 Condition of use

During the use phase, products based on polyurethane or silane-modified polymer are crosslinked and essentially comprise an inert three-dimensional network. They are long-lasting products which protect our buildings in the form of adhesives, coatings or sealants as well as make an essential contribution in retaining their function and long-term value.

## 2.11 Environment and health during use

### Option 1: Products for applications outside indoor areas with permanent stays by people

During use, the reactive products lose their reactive properties and become inert. No risks are known for water, air and soil if the products are used as designated.

### Option 2: Products for applications inside indoor areas with permanent stays by people

When used in indoor areas with permanent stays by people, evidence of the emission performance of construction products in contact with indoor air must be submitted according to national requirements (see chapter 7). No further influences by emissions on the environment and health are known.

## 2.12 Reference service life

Cured products based on polyurethane or silane-modified polymer fulfil manifold, often specific functions in the construction or refurbishment of building structures. They decisively improve the usability of building structures and significantly extend their original service lives. The anticipated reference service life depends on the specific installation situation and the exposure associated with the product. It can be influenced by weathering as well as mechanical or chemical loads.

## 2.13 Extraordinary effects

### Fire

Even without any special fire safety features, cured products based on polyurethane or silane-modified polymer comply with at least the requirements of EN 13501-1 standard for fire classes E and Efl. In terms of the volumes applied, they have only a marginal influence on the fire performance characteristics (e.g. smoke gas development) of the building structure in which they have been installed. As crosslinked polyurethane systems do not melt or drip, they do not contribute towards spreading fire.

### Water

Cured reactive products based on polyurethane or silane-modified polymer are chemically inert and insoluble in water. They are often used to protect building structures from harmful water ingress or the effects of flooding.

### Mechanical destruction

Mechanical destruction of cured reactive products based on polyurethane or silane-modified polymer does not lead to any decomposition products which are harmful to the environment or health.

### 2.14 Re-use phase

According to present knowledge, no environmentally harmful effects are generally anticipated in landfilling, for example, as a result of de-construction and recycling of building materials with adherent

crosslinked products. If the crosslinked products can be removed from construction products without large effort, thermal recovery is a practical recycling variant on account of their energy content. Minor adhesion is not taken into consideration during disposal. It does not interfere with the disposal/recycling of the remaining components/building materials.

## 2.15 Disposal

Residual material which cannot be used or recycled must be combined at a specified ratio and hardened. Hardened product residue is not special waste. Non-hardened product residue is hazardous waste. Empty, dried containers (free of drops and scraped clean) are directed to the recycling process. Residue must be directed to proper waste disposal taking into consideration the local guidelines. The following waste codes according to the European List of Waste (2000/532/EC) can apply:

### Hardened product residue:

European Waste Catalogue (EWC) code 080112 (waste paint and varnish with the exception of that mentioned in 08 01 11)  
EWC code 080410 (waste adhesives and sealants other than mentioned in 08 04 09)

## 2.16 Further information

More information is available on the manufacturer's product or safety data sheets and on the manufacturer's websites or on request. Valuable technical information is also available on the associations' websites.

## 3. LCA: Calculation rules

### 3.1 Declared Unit

This EPD refers to the declared unit of 1 kg of product based on polyurethane or silane-modified polymer, group 1; applied into the building with a density of 1.25 - 1.8 g/cm<sup>3</sup> in accordance with the IBU PCR part B for reaction resin products.

The results of the Life Cycle Assessment provided in this declaration have been selected from the product with the highest environmental impact (worst-case scenario).

Depending on the application, a corresponding conversion factor such as the density to convert volumetric use to mass must be taken into consideration.

The Declaration type is according to EN 15804: Cradle to gate with options, modules C1–C3, and module D (A1–A3, C, D) and additional modules.

### Declared unit

| Name                      | Value      | Unit              |
|---------------------------|------------|-------------------|
| Declared unit             | 1          | kg                |
| Gross density             | 1.25 - 1.8 | g/cm <sup>3</sup> |
| Conversion factor to 1 kg | -          | -                 |

### 3.2 System boundary

Modules A1, A2 and A3 are taken into consideration in the LCA:

- A1 Production of preliminary products
- A2 Transport to the plant
- A3 Production incl. provision of energy, production of packaging as well as auxiliaries and consumables and waste treatment

- A4 Transport to site

- A5 Installation, product applied into the building during A5 phase operations and packaging disposal. This stage considers VOC emissions during the installation phase. The declared product does not contain substances in the formulation that directly emit (as) VOC, but VOCs are generated by a chemical reaction that are occurring during this phase. The end of life for the packaging material considered is described below:

- Incineration, for materials like plastic and wood.
- Landfill, for inert material like metals (where used).

-C1-C2-C3-D

The building deconstruction (demolition process) takes place in the C1 module which considers energy production and consumption in terms of diesel and all the emissions connected with the fuel-burning process to run the machines. After the demolition, the product is transported to the end-of-life processing (C2 module) where all the impacts related to the transport processes are considered. For precautionary principle and as a worst-case scenario, thermal treatment is the only end-of-life scenario considered. This is modelled by the incineration process (module C3) where the product ends its life cycle.

Module D accounts for potential benefits that are beyond the defined system boundaries. Credits are generated during the incineration of wastes and related electricity produced that are occurring in the A5 module.

### 3.3 Estimates and assumptions

For this EPD formulation and production data defined and collected by FEICA were considered. Production

waste was assumed to be disposed of by incineration without credits as a worst-case.  
An average of steel and plastic containers, and wooden pallets was considered in the LCA.

### 3.4 Cut-off criteria

All raw materials submitted for the formulations and production data were taken into consideration. The manufacture of machinery, plant and other infrastructure required for the production of the products under review was not taken into consideration in the LCA.  
Transport of packaging materials is excluded.

### 3.5 Background data

Data from the *GaBi* database SP40 (2020) was used as background data.

### 3.6 Data quality

Representative products were applied for this EPD and the product in the group displaying the highest environmental impact was selected for calculating the

LCA results. The background data sets used are less than 4 years old.  
Production data and packaging are based on details provided by the manufacturer. The formulation used for evaluation refers to a specific product.  
The data quality of the background data is considered to be good.

### 3.7 Period under review

Representative formulations are valid for 2021.

### 3.8 Allocation

Mass allocation has been applied when primary data have been used and implemented into the LCA model.

### 3.9 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.

The *GaBi* database SP40 (2020) was used.

## 4. LCA: Scenarios and additional technical information

### Characteristic product properties

#### Information on biogenic Carbon

The packaging material contains biogenic carbon content which is presented below.

|              |   |    |
|--------------|---|----|
| Incineration | 1 | kg |
|--------------|---|----|

#### Information on describing the biogenic Carbon Content at factory gate

| Name  | Value | Unit |
|---|-------|------|
| Biogenic Carbon Content in product                | 0     | kg C |
| Biogenic Carbon Content in accompanying packaging | 0.016 | kg C |

#### Transport to the building site (A4)

| Name               | Value   | Unit |
|--------------------|---------|------|
| Transport distance | 1000    | km   |
| Gross weight       | 34 - 40 | t    |
| Payload capacity   | 27      | t    |

#### Assembly (A5)

| Name                                   | Value | Unit |
|--|-------|------|
| Other resources for packaging material | 0.1   | kg   |
| Material loss                          | 0.01  | kg   |

Material loss regards the amount of product not used during the application phase into the building. This amount is 1% of the product, impacts related to the production of this part are charged to the A5 module. This percentage is considered as waste to disposal and impacts of its end of life have been considered in the LCA model and declared in A5.

#### End of life (C1-C3)

| Name                                  | Value | Unit |
|---------------------------------------|-------|------|
| Collected as mixed construction waste | 1     | kg   |

## 5. LCA: Results

### DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = 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                          | X                                   | X        | ND  | ND          | MNR    | MNR         | MNR               | ND                     | ND                    | X   | X         | X                | ND       | X                                  |

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 kg of product based on polyurethane or silane modified polymer, group 1

| Core Indicator | Unit                               | A1-A3    | A4       | A5       | C1       | C2       | C3       | D         |
|----------------|------------------------------------|----------|----------|----------|----------|----------|----------|-----------|
| GWP-total      | [kg CO <sub>2</sub> -Eq.]          | 4.79E+0  | 5.27E-2  | 1.80E-1  | 2.79E-4  | 1.24E-2  | 2.21E+0  | -9.50E-1  |
| GWP-fossil     | [kg CO <sub>2</sub> -Eq.]          | 4.81E+0  | 5.22E-2  | 9.38E-2  | 2.66E-4  | 1.18E-2  | 2.21E+0  | -9.47E-1  |
| GWP-biogenic   | [kg CO <sub>2</sub> -Eq.]          | -3.57E-2 | 1.52E-4  | 8.62E-2  | 1.24E-5  | 5.42E-4  | 8.82E-5  | -2.23E-3  |
| GWP-luluc      | [kg CO <sub>2</sub> -Eq.]          | 4.50E-3  | 4.22E-4  | 4.84E-5  | 6.39E-9  | 2.79E-7  | 2.08E-5  | -6.66E-4  |
| ODP            | [kg CFC11-Eq.]                     | 6.76E-9  | 6.27E-18 | 6.76E-11 | 2.84E-20 | 1.24E-18 | 2.62E-16 | -9.93E-15 |
| AP             | [mol H <sup>+</sup> -Eq.]          | 1.02E-2  | 1.56E-4  | 1.29E-4  | 3.60E-6  | 3.73E-5  | 1.31E-3  | -1.33E-3  |
| EP-freshwater  | [kg P-Eq.]                         | 1.93E-5  | 1.59E-7  | 1.98E-7  | 5.75E-11 | 2.51E-9  | 4.40E-8  | -1.23E-6  |
| EP-marine      | [kg N-Eq.]                         | 2.67E-3  | 6.96E-5  | 3.50E-5  | 1.63E-6  | 1.72E-5  | 6.31E-4  | -3.43E-4  |
| EP-terrestrial | [mol N-Eq.]                        | 2.93E-2  | 7.80E-4  | 4.11E-4  | 1.79E-5  | 1.89E-4  | 7.26E-3  | -3.68E-3  |
| POCP           | [kg NMVOC-Eq.]                     | 9.47E-3  | 1.38E-4  | 7.20E-3  | 4.91E-6  | 3.39E-5  | 1.62E-3  | -9.87E-4  |
| ADPE           | [kg Sb-Eq.]                        | 8.18E-6  | 3.74E-9  | 8.22E-8  | 8.06E-12 | 3.52E-10 | 4.65E-9  | -1.56E-7  |
| ADPF           | [MJ]                               | 1.05E+2  | 6.94E-1  | 1.11E+0  | 3.81E-3  | 1.66E-1  | 5.87E-1  | -1.61E+1  |
| WDP            | [m <sup>3</sup> world-Eq deprived] | 1.34E+0  | 4.66E-4  | 2.69E-2  | 5.27E-7  | 2.30E-5  | 2.17E-1  | -9.86E-2  |

Caption GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

### RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 kg of product based on polyurethane or silane modified polymer, group 1

| Indicator | Unit              | A1-A3   | A4      | A5       | C1      | C2      | C3       | D        |
|-----------|-------------------|---------|---------|----------|---------|---------|----------|----------|
| PERE      | [MJ]              | 6.67E+0 | 3.90E-2 | 6.65E-1  | 1.20E-5 | 5.25E-4 | 8.23E-2  | -3.52E+0 |
| PERM      | [MJ]              | 5.85E-1 | 0.00E+0 | -5.85E-1 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| PERT      | [MJ]              | 7.26E+0 | 3.90E-2 | 7.99E-2  | 1.20E-5 | 5.25E-4 | 8.23E-2  | -3.52E+0 |
| PENRE     | [MJ]              | 8.33E+1 | 6.95E-1 | 1.63E+0  | 3.81E-3 | 1.67E-1 | 2.21E+1  | -1.61E+1 |
| PENRM     | [MJ]              | 2.20E+1 | 0.00E+0 | -5.20E-1 | 0.00E+0 | 0.00E+0 | -2.15E+1 | 0.00E+0  |
| PENRT     | [MJ]              | 1.05E+2 | 6.95E-1 | 1.11E+0  | 3.81E-3 | 1.67E-1 | 5.87E-1  | -1.61E+1 |
| SM        | [kg]              | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| RSF       | [MJ]              | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| NRSF      | [MJ]              | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  |
| FW        | [m <sup>3</sup> ] | 4.03E-2 | 4.52E-5 | 7.22E-4  | 2.16E-8 | 9.41E-7 | 5.11E-3  | -4.08E-3 |

Caption PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

### RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 kg of product based on polyurethane or silane modified polymer, group 1

| Indicator | Unit | A1-A3   | A4      | A5      | C1       | C2       | C3       | D        |
|-----------|------|---------|---------|---------|----------|----------|----------|----------|
| HWD       | [kg] | 1.12E-5 | 3.23E-8 | 1.12E-7 | 3.70E-13 | 1.62E-11 | 3.34E-10 | -6.41E-9 |
| NHWD      | [kg] | 1.66E-1 | 1.06E-4 | 4.75E-2 | 3.90E-7  | 1.70E-5  | 1.11E-2  | -7.44E-3 |
| RWD       | [kg] | 2.34E-3 | 8.60E-7 | 2.54E-5 | 4.09E-9  | 1.79E-7  | 2.37E-5  | -1.20E-3 |
| CRU       | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0  |
| MFR       | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0  |
| MER       | [kg] | 0.00E+0 | 0.00E+0 | 0.00E+0 | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0  |
| EEE       | [MJ] | 0.00E+0 | 0.00E+0 | 2.12E-1 | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0  |
| EET       | [MJ] | 0.00E+0 | 0.00E+0 | 3.86E-1 | 0.00E+0  | 0.00E+0  | 0.00E+0  | 0.00E+0  |

Caption HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

### RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 kg of product based on polyurethane or silane modified polymer, group 1

| Indicator | Unit                | A1-A3 | A4 | A5 | C1 | C2 | C3 | D  |
|-----------|---------------------|-------|----|----|----|----|----|----|
| PM        | [Disease Incidence] | ND    | ND | ND | ND | ND | ND | ND |
| IRP       | [kBq U235-Eq.]      | ND    | ND | ND | ND | ND | ND | ND |
| ETP-fw    | [CTUe]              | ND    | ND | ND | ND | ND | ND | ND |
| HTP-c     | [CTUh]              | ND    | ND | ND | ND | ND | ND | ND |
| HTP-nc    | [CTUh]              | ND    | ND | ND | ND | ND | ND | ND |
| SQP       | [·]                 | ND    | ND | ND | ND | ND | ND | ND |

Caption PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Potential Human exposure efficiency relative to U235, Disclaimer 1 – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and (from) some construction materials is also not measured by this indicator.

ADP minerals & metals, ADP fossil, WDP, ETF-fw, HTP-c, HTP-nc, SQP, Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

**Additional environmental impact indicators** (suggested by EN15804, table 4) are not declared in the EPD. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high and as there is limited experience with the indicator (see ILCD classification in EN 15804, table 5). For this reason, results based on these indicators are not considered suitable for a decision-making process and are thus not declared in the EPD.

## 6. LCA: Interpretation

The majority of impacts are associated with the production phase (A1-A3). The most significant contribution to the production phase impacts is the upstream production of raw materials as the main driver. Another substantial contributor in the production phase, in the category of Abiotic depletion potential for nonfossil resources (ADPminerals& metals), is the steel sheet used as a packaging material. Emissions associated with the manufacturing of products also have some influence on the Formation potential of tropospheric ozone (POCP) in the production phase. In all EPDs, CO<sub>2</sub> is the most important contributor to Global Warming Potential (GWP). For the Acidification Potential (AP), NOx and SO<sub>2</sub> contribute the largest share. In some cases, HCl in water also impacts AP due to the use of TiO<sub>2</sub> as a pigment.

The majority of life cycle energy consumption takes place during the production phase (A1-A3). Significant contributions to Primary Energy Demand – Non-renewable (PENRT) come from the energy resources used in the production of raw materials. The largest contributor to Primary Energy Demand – Renewable

(PERT) impacts comes from the consumption of renewable energy resources required for the generation and supply of electricity. It should be noted that Primary Energy Demand – Renewable (PERT) generally represents a small percentage of the production phase primary energy demand with the bulk of the demand coming from non-renewable energy resources.

Transportation to the construction site (A4) and the installation process (A5) make a low contribution to all impacts.

The installation phase influences mainly the Photochemical ozone formation indicator, due to the emission of VOC during the operations. These emissions are not directly related to the pre-products in the resins, but they are related to the reaction products between pre-products and air components (water and oxygen).

The end-of-life phases influence climate change indicators, due to the incineration processes occurring in the C3 module, the process used for modelling the thermal treatment process of the resin.

## 7. Requisite evidence

### VOC

Special tests and evidence have not been carried out or provided within the framework of drawing up this Model EPD. Some member states require special documentation on VOC emissions into indoor air for specific areas of application. This documentation, as well as documentation for voluntary VOC labelling, has to be provided separately and is specific for product in question.

Evidence pertaining to VOC emissions shall show

- either an attestation of compliance with,
- or documentation of test data that are required in

any of the existing regulations or in any of the existing voluntary labelling programs for low-emitting products, as far as these

- (1) include limits for the parameters TVOC, TSVOC, carcinogens, formaldehyde, acetaldehyde, LCI limits for individual substances (including but not limited to the European list of harmonized LCIs), and the R value;
- (2) base their test methods on EN 16516;
- (3) perform testing and apply the limits after 28 days of storage in a ventilated test chamber, under the conditions specified in EN 16516; some regulations

and programs also have limits after 3 days, on top of the 28 days limits;  
(4) express the test results as air concentrations in the European Reference Room, as specified in EN 16516.

Examples of such regulations are the *Belgian Royal Decree C-2014/24239*, or the *German AgBB/ABG*. Examples of such voluntary labelling programs are *EMICODE*, *Blue Angel* or *Indoor Air Comfort*.

Relevant test results shall be produced either by an ISO 17025 accredited commercial test lab or by a qualified internal test lab of the manufacturer.

Examples for the applied limits after 28 days of storage in a ventilated test chamber are:

- TVOC: 1000 µg/m<sup>3</sup>

- TSVOC: 100 µg/m<sup>3</sup>
- Each carcinogen: 1 µg/m<sup>3</sup>
- Formaldehyde: 100 µg/m<sup>3</sup>
- LCI: different per substance involved
- R value: 1 (meaning that, in total, 100 % of the combined LCI values must not be exceeded).

Informative Annexes (2 tables):

Table 1 shown below is an overview of the most relevant regulations and specifications as of October 2021, as regards requirements after 3 days of storage in a ventilated test chamber.

Table 2 provides an overview of the most relevant regulations and specifications as of October 2021, as regards requirements after 28 days of storage in a ventilated test chamber. Some details may be missing in the table due to lack of space. Values given represent maximum values/limits.

|                             | TVOC<br>µg/m <sup>3</sup> | Sum of<br>carcinogens.<br>C1A,CA2<br>µg/m <sup>3</sup> | Formaldehyde<br>µg/m <sup>3</sup> | Acetaldehyde<br>µg/m <sup>3</sup> | Sum of<br>Form- and<br>Acetaldehyde |
|-----------------------------|---------------------------|--|-----------------------------------|-----------------------------------|-------------------------------------|
| German AgBB/ABG regulation  | 10 000                    | 10   | -/-                               | -/-                               | -/-                                 |
| Belgian regulation          | 10 000                    | 10   | -/-                               | -/-                               | -/-                                 |
| EMICODE EC1                 | 1 000                     | 10   | 50                                | 50                                | 50 ppb                              |
| EMICODE EC1 <sup>PLUS</sup> | 750                       | 10   | 50                                | 50                                | 50 ppb                              |

|                                   | TVOC<br>µg/m <sup>3</sup>  | TSVOC<br>µg/m <sup>3</sup> | Each<br>carcinogen<br>C1A,CA2<br>µg/m <sup>3</sup> | Formalde-<br>hyde<br>µg/m <sup>3</sup> | Acetalde-<br>hyde<br>µg/m <sup>3</sup> | LCI                    | R<br>value | Specials                         | Sum of<br>non-LCI &<br>non-<br>identified<br>µg/m <sup>3</sup> |
|-----------------------------------|----------------------------|----------------------------|--|--|--|------------------------|------------|----------------------------------|--|
| Belgian<br>regulation             | 1000                       | 100                        | 1  | 100                                    | 200                                    | Belgian<br>list        | 1          | Toluene 300<br>µg/m <sup>3</sup> | -/-  |
| French<br>regulations<br>class A+ | 1000                       | -/-                        | -/-  | 10                                     | 200                                    | -/-                    | -/-        | List of 8<br>VOCs,<br>4 CMR      | -/-  |
| French<br>regulations<br>class A  | 1500                       | -/-                        | -/-  | 60                                     | 300                                    | -/-                    | -/-        | List of 8<br>VOCs,<br>4 CMR      | -/-  |
| French<br>regulations<br>class B  | 2000                       | -/-                        | -/-  | 120                                    | 400                                    | -/-                    | -/-        | List of 8<br>VOCs,<br>4 CMR      | -/-  |
| French<br>regulations<br>class C  | >2000                      | -/-                        | -/-  | >120                                   | >400                                   | -/-                    | -/-        | List of 8<br>VOCs,<br>4 CMR      | -/-  |
| German<br>DIBt/AgBB<br>regulation | 1000                       | 100                        | 1  | 100                                    | 300                                    | German<br>AgBB<br>list | 1          | -/-                              | 100  |
| EMICODE<br>EC1                    | 100                        | 50                         | 1<br>(after 3<br>days)                             | (after 3<br>days)                      | -/-                                    | -/-                    | -/-        | -/-                              | -/-  |
| EMICODE<br>EC1 <sup>PLUS</sup>    | 60                         | 40                         | 1<br>(after 3<br>days)                             | (after 3<br>days)                      | German<br>AgBB<br>list                 | 1                      | -/-        | 40                               |  |
| Finnish M1,<br>sealants           | 20                         | -/-                        | 1  | 10                                     | 300                                    | EU LCI<br>list         | -/-        | Ammonia,<br>odour                | -/-  |
| Finnish M1,<br>adhesives          | 200<br>µg/m <sup>2</sup> h | -/-                        | 5 µg/m <sup>2</sup> h                              | 50<br>µg/m <sup>2</sup> h              | 300                                    | EU LCI<br>list         | -/-        | Ammonia,<br>odour                | -/-  |

## 8. References

### ETAG 033

Liquid applied bridge deck waterproofing kits

ISO 48-4

ISO 48-4:2018, Rubber, vulcanized or thermoplastic - Determination of hardness- Part 4: Indentation hardness by durometer method (Shore hardness)

#### **EN ISO 717-1**

EN ISO 717-1:2020 Acoustics - Rating of sound insulation in buildings and of building elements - Part 1: Airborne sound insulation

#### **EN 1062-3**

EN 1062-3:2008-04, Paints and varnishes - Coating materials and coating systems for exterior masonry and concrete - Part 3: Determination of liquid water permeability

#### **EN 1062-6**

EN 1062-6:2002-10, Paints and varnishes - Coating materials and coating systems for exterior masonry and concrete - Part 6: Determination of carbon dioxide permeability

#### **EN 1279-4**

EN 1279-4:2002 Glass in building - Insulating glass units - Part 4: Methods of test for the physical attributes of edge seals

#### **EN 1504-2**

EN 1504-2:2004-12, Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 2: Surface protection systems for concrete

#### **EN 1504-4**

EN 1504-4:2004-11, Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity- Part 4: Structural bonding

#### **EN 1504-5**

EN 1504-5:2004-12, Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 5: Concrete injection

#### **EN 1542**

EN 1542:1999-07, Products and systems for the protection and repair of concrete structures - Test methods - Measurement of bond strength by pull-off

#### **EN 1771**

EN 1771:2004-11, Products and systems for the protection and repair of concrete structures - Test methods - Determination of injectability and splitting test

#### **ISO 2811-1**

ISO 2811-1:2016, Paints and varnishes - Determination of density - Part 1: Pycnometer method

#### **EN ISO 3219**

EN ISO 3219:1994-10, Plastics - Polymers/resins in the liquid state or as emulsions or dispersions - Determination of viscosity using a rotational viscometer with defined shear rate

#### **ISO 3219-2**

ISO 3219-2:2021, Rheology - Part 2: General principles of rotational and oscillatory rheometry

#### **EN ISO 7783**

EN ISO 7783:2019-02, Paints and varnishes - Determination of water-vapour transmission properties - Cup method

#### **EN 12004**

EN 12004:2012, Adhesives for ceramic tiles

#### **EN 12004-1**

EN 12004-1:2017, Adhesives for ceramic tiles – Part 1: Requirements, assessment and verification of constancy of performance, classification and marking

#### **EN 12004-2**

EN 12004-2:2017, Adhesives for ceramic tiles - Part 2: Test methods

#### **EN 13501-1**

EN 13501-1:2018, Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

#### **EN 13813**

EN 13813:2002-10, Screed material and floor screeds - Screed materials - Properties and requirements

#### **EN 13892-8**

EN 13892:2003-02, Methods of test for screed materials - Part 8: Determination of bond strength

#### **ISO 14025**

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

#### **EN 14891**

EN 14891:2012-04, Liquid applied water impermeable products for use beneath ceramic tiling - Definitions, specifications and test methods

#### **EN 15804**

EN 15804:2019+A2, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

#### **EN 16516**

EN 16516:2017  
Construction products - Assessment of release of dangerous substances - Determination of emissions into indoor air

#### **EN ISO 17025**

EN ISO 17025:2018-03  
General requirements for the competence of testing and calibration laboratories

#### **EN ISO 17178**

EN ISO 17178:2020-06, Adhesives - Adhesives for bonding parquet to subfloor - Test methods and minimum requirements

#### **EN 17333-2**

EN 17333-2:2020+AC:2020, Characterisation of one component foam - Part 2: Expansion characteristics

#### **EN 17333-3**

EN 17333-3:2020, Characterisation of one component foam - Part 3: Application

#### **EN 17333-4**

EN 17333-4:2020, Characterisation of one component foam - Part 4: Mechanical strength

**EN 17333-5**

EN 17333-5:2020, Characterisation of one component foam - Part 5: Insulation

**EN ISO 22636**

EN ISO 22636:2020, Adhesives - Adhesives for floor coverings - Requirements for mechanical and electrical performance

**EAD 030350-00-0402**

EAD 030350-00-0402:2018-08, Liquid Applied Roof Waterproofing Kits

**EAD 030352-00-0503**

EAD 030352-00-0503:2019-01, Liquid applied watertight covering kits for wet room floors and/or walls

**2000/532/EC**

Commission decision dated 3 May 2000 replacing decision 94/3/EC on a waste directory in accordance with Article 1 a) of Council Directive 75/442/EEC on waste and Council decision 94/904/EC on a directory of hazardous waste in terms of Article 1, paragraph 4 of Directive 91/689/EEC on hazardous waste

**Belgian Royal Decree C-2014/24239**

Belgisch Staatsblad 8 MEI 2014, p. 60603. — Koninklijk besluit tot vaststelling van de drempelniveaus voor de emissies naar het binnenmilieu van bouwproducten voor bepaalde geoogde gebruiken

**Blue Angel**

Environmental label organised by the federal government of Germany [www.blauer-engel.de](http://www.blauer-engel.de)

**CPR**

CPR Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC

**Decopaint Directive**

Directive 2004/42/CE of the European Parliament and the council of 21 April 2004 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC

**EMICODE**

EMICODE, GEV – Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e. V. ([pub.](http://www.emicode.de))[www.emicode.de](http://www.emicode.de)

**GaBi 10 software & documentation**

Data base for Life Cycle Engineering LBP, University of Stuttgart and Sphera, documentation of GaBi 10

data sets <http://documentation.gabi-software.com/>, 2020

**German AgBB**

Committee for Health-related Evaluation of Building Products: health-related evaluation of emissions of volatile organic compounds (VOC and SVOC) from building products; status: June 2012  
[www.umweltbundesamt.de/produkte/bauprodukte/agb\\_b.htm](http://www.umweltbundesamt.de/produkte/bauprodukte/agb_b.htm)

**IBU 2021**

Institut Bauen und Umwelt e.V.: General Instructions for the EPD programme of Institut Bauen und Umwelt e.V. EPD programme. Version 2.0. Berlin: Institut Bauen und Umwelt e.V., 2021  
[www.ibu-epd.com](http://www.ibu-epd.com)

**ift-Guideline VE-08/4**

ift-Guideline VE-08/4:2017, Beurteilungsgrundlage für geklebte Verglasungssysteme

**Indoor Air Comfort**

Product certification by Eurofins, Hamburg, Germany  
[www.eurofins.com](http://www.eurofins.com)

**PCR Part A**

Product Category Rules for Building-Related Products and Services, Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project report, Version 1.1, Institut Bauen und Umwelt e.V., 2021-01

**PCR Part B**

Product Category Rules for Construction Products, Part B: Reaction resin products, Institut Bauen und Umwelt e.V., 2019-01

**RAL-GZ 716**

RAL-GZ 716:2019-04 part 2, Kunststoff-Fensterprofilsysteme - Gütesicherung

**REACH**

Directive (EG) No. 1907/2006 of the European Parliament and of the Council dated 18 December 2006 on the registration, evaluation, approval and restriction of chemical substances (REACH), for establishing a European Agency for chemical substances, for amending Directive 1999/45/EC and for annulment of Directive (EEC) No. 793/93 of the Council, Directive (EC) No. 1488/94 of the Commission, Guideline 76/769/EEC of the Council and Guidelines 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC of the Commission.

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# OTTOCOLL® M 550

## HiTack

### Nachhaltigkeitsdatenblatt

#### Prüfungen/Zulassungen



- EMICODE® EC 1<sup>PLUS</sup> – sehr emissionsarm



- Französische VOC-Emissionsklasse A+



- Deklaration in Baubook Österreich

Informationen unter: [www.baubook.info](http://www.baubook.info)

- Umweltproduktdeklaration (EPD)

Deklarationsnummer: EPD-FEI-20220021-IBG1-EN

#### Gebäudezertifizierungssysteme

##### QNG - Qualitätssiegel Nachhaltiges Gebäude

###### Version 1.3

|                   |   |
|-------------------|---|
| Kriterium         | Schadstoffvermeidung in Baumaterialien  |
| Übersichtstabelle | 4. Kleb- und Dichtstoffe - Zeile 4.2  |
| Bauproduktgruppe  | Bauseitig verarbeitete Kleb- und Dichtstoffe auf Basis von PU-, PU-Hybrid- und SMP-Rezepturen (silanmodifizierte Polymere) in Innenräumen   |
| Anforderungen     | Produktdokumentation und Deklaration enthaltener SVHC >0,1 % und Chlorparaffine, TCEP, PBB und PBDE ≤0,1 % und lösemittelfrei oder GISCODE PU10, PU20, PU40 (ALT) bzw. PU50 (ALT) |
| Einstufung        | <b>Erfüllt die Anforderungen, da Deklaration enthaltener SVHC &gt;0,1 % und Chlorparaffine, TCEP, PBB und PBDE ≤0,1 % und lösemittelfrei.</b>                                     |

## DGNB – Deutsche Gesellschaft für Nachhaltiges Bauen

### Version 2023

|                 |  |   |
|-----------------|--|---|
| Kriterium       | ENV 1.2 Risiken für die lokale Umwelt  |   |
| Kriterienmatrix | Zeile 11   |   |
| Produktyp       | Dichtungsmassen, Dichtstoffe, Klebstoffe für punkt- und linienförmige Verklebungen von Bauteilen im Innenraum:<br>- mechanisch belastete Fugen<br>- Sockelleisten<br>- Türschienen<br>- Stützenkleber (Doppel- oder Hohlboden)<br>- Lüftungskanäle |   |
| Anforderungen   | Qualitätsstufe 1 (niedrig)   | GISCODE PU10, PU20, RS10, DA20, DSE20, DSA20, DSO20 oder DH20 und Bonuspunkte SVHC ≤0,1 %                                   |
|                 | Qualitätsstufe 2   | GISCODE PU10, PU20, RS10, DA20, DSE20, DSA20, DSO20 oder DH20 und Bonuspunkte SVHC ≤0,1 %                                   |
|                 | Qualitätsstufe 3   | GISCODE PU10, PU20, RS10, DA20, DSE20, DSA20, DSO20 oder DH20 und EMICODE® EC 1 <sup>PLUS</sup> und Bonuspunkte SVHC ≤0,1 % |
|                 | Qualitätsstufe 4 (hoch)  | GISCODE PU10, PU20, RS10, DA20, DSE20, DSA20, DSO20 oder DH20 und EMICODE® EC 1 <sup>PLUS</sup> und Bonuspunkte SVHC ≤0,1 % |
| Einstufung      | <b>Erfüllt die Anforderungen an Qualitätsstufe 4, da GISCODE RS10 und EMICODE® EC 1<sup>PLUS</sup> und SVHC ≤0,1 %.</b>  |   |

## DGNB – Deutsche Gesellschaft für Nachhaltiges Bauen

### Version 2018

|                 |   |  |
|-----------------|---|--|
| Kriterium       | ENV 1.2 Risiken für die lokale Umwelt   |  |
| Kriterienmatrix | Zeile 11  |  |
| Produktyp       | Dichtungsmassen, Dichtstoffe, Klebstoffe für punkt- und linienförmige Verklebungen von Bauteilen im Innenraum. Gemeint sind PU-Kleber und silanmodifizierte Polymere (SMP). |  |
| Anforderungen   | Qualitätsstufe 1 (niedrig)  | GISCODE PU20 oder RS10   |
|                 | Qualitätsstufe 2  | GISCODE PU20 oder RS10   |
|                 | Qualitätsstufe 3  | GISCODE PU20 oder RS10 und EMICODE® EC 1 oder EC 1 <sup>PLUS</sup> |
|                 | Qualitätsstufe 4 (hoch)   | GISCODE PU20 oder RS10 und EMICODE® EC 1 oder EC 1 <sup>PLUS</sup> |
| Einstufung      | <b>Erfüllt die Anforderungen an Qualitätsstufe 4, da GISCODE RS10 und EMICODE® EC 1<sup>PLUS</sup>.</b>   |  |

## DGNB – Deutsche Gesellschaft für Nachhaltiges Bauen

### Version 2018

|                 |  |   |
|-----------------|--|---|
| Kriterium       | ENV 1.2 Risiken für die lokale Umwelt  |   |
| Kriterienmatrix | Zeile 12   |   |
| Produktyp       | Dichtungsmassen, Dichtstoffe, Klebstoffe für punkt- und linienförmige Verklebungen von Bauteilen im Innenraum und Lüftungskanälen im Gebäudeinneren. Gemeint sind Acrylatdichtstoffe/-kleber, Silikondichtstoffe und SMP-(Hybrid-Dichtstoffe). |   |
| Anforderungen   | Qualitätsstufe 1 (niedrig)   | -   |
|                 | Qualitätsstufe 2   | Keine im SDB deklarierten Chlorparaffine                          |
|                 | Qualitätsstufe 3   | Chlorparaffine <0,1 %   |
|                 | Qualitätsstufe 4 (hoch)  | Chlorparaffine <0,1 %, Lösemittel <1 % und KWS-Weichmacher <0,1 % |
| Einstufung      | <b>Erfüllt die Anforderungen an Qualitätsstufe 4, da Chlorparaffine &lt;0,1 %, Lösemittel &lt;1 % und KWS-Weichmacher &lt;0,1 %.</b>   |   |

# BNB – Bewertungssystem Nachhaltiges Bauen

Version 2015

|                          |   |  |
|--------------------------|---|--|
| Kriterium                | 1.1.6 Risiken für die lokale Umwelt   |  |
| Übersichtstabelle        | 6. Kleb- und Dichtstoffe – Zeile 8  |  |
| Bauproducttyp            | Kleb- und Dichtstoffe aus PU, SMP (silanmodifizierte Polymere), Acrylat (einschließlich Dispersionsklebstoffe) oder Silikon für punkt- und linienförmige Verklebungen und Abdichtungen im Innenraum inkl. TGA.  |  |
| Anforderungen            | Qualitätsniveau 1 (niedrig)   | Dokumentation, Deklaration enthaltener SVHC >0,1 % und Deklaration biozider Wirkstoffe (sofern eingesetzt).  |
|                          | Qualitätsniveau 2   | Deklaration biozider Wirkstoffe (sofern eingesetzt) und Deklaration enthaltener SVHC >0,1 % und Chlorparaffine <0,1 %.<br>Für PU-Klebstoffe gilt zusätzlich: GISCODE PU10 oder PU20 und TCEP <0,1 %.   |
|                          | Qualitätsniveau 3   | Deklaration biozider Wirkstoffe (sofern eingesetzt) und Deklaration enthaltener SVHC >0,1 % und Chlorparaffine <0,1 %.<br>Für PU-Klebstoffe gilt zusätzlich: GISCODE PU10 oder PU20 und TCEP <0,1 %.   |
|                          | Qualitätsniveau 4   | Keine amin- oder oximvernetzenden Silikone.<br>Zusätzlich gilt: RAL-UZ 123 oder EMICODE® EC 1/EC 1 <sup>PLUS</sup> und Chlorparaffine <0,1 % und Deklaration biozider Wirkstoffe (sofern eingesetzt) und Deklaration enthaltener SVHC >0,1 %.<br>Für PU-Klebstoffe gilt zusätzlich: TCEP <0,1 %. |
|                          | Qualitätsniveau 5 (hoch)  | Keine amin- oder oximvernetzenden Silikone.<br>Zusätzlich gilt: RAL-UZ 123 oder EMICODE® EC 1/EC 1 <sup>PLUS</sup> und Chlorparaffine <0,1 % und Deklaration biozider Wirkstoffe (sofern eingesetzt) und Deklaration enthaltener SVHC >0,1 %.<br>Für PU-Klebstoffe gilt zusätzlich: TCEP <0,1 %. |
| Einstufung               | <b>Erfüllt die Anforderungen an Qualitätsniveau 5, da kein amin- oder oximvernetzendes Silikon und EMICODE® EC1<sup>PLUS</sup> und Deklaration der bioziden Wirkstoffe (sofern eingesetzt) und Deklaration enthaltener SVHC &gt;0,1 % und Chlorparaffine &lt;0,1 %.</b>   |  |
| Dokumentationsunterlagen | <p>Alle aufgeführten Dokumente stehen auf <a href="http://www.otto-chemie.de">www.otto-chemie.de</a> zum Download bereit</p> <ol style="list-style-type: none"><li>1. Technisches Datenblatt</li><li>2. Sicherheitsdatenblatt</li><li>3. Nachhaltigkeitsdatenblatt</li><li>4. Prüfzeugnisse</li><li>5. Umweltproduktdeklaration</li></ol> |  |

Diese Angaben basieren auf unserem Wissen zum Zeitpunkt der Erstellung (siehe unten). Die aktuelle Version ist auf unserer Website unter [www.otto-chemie.de](http://www.otto-chemie.de) einsehbar. Darüber hinaus gelten die Angaben in den produktbegleitenden Dokumenten.

**Lizenzerteilung zur Führung des EMICODE**

Lizenzierungs-Nummer: 12989/10.10.13

Für den Artikel OTTOCOLL® M 550 HiTack  
der Firma Hermann Otto GmbH  
wird auf Antrag vom 26.01.2021

unter Bezugnahme auf die Einstufung gemäß den nach § 10 der GEV-Zeichensatzung festgelegten Richtlinien

namens der Gemeinschaft Emissionskontrollierte Verlegewerkstoffe, Klebstoffe und Bauprodukte e.V. für den oben genannten Artikel nach § 5 Abs. 4 der GEV-Zeichensatzung die Lizenz zur Führung des GEV-Zeichens



erteilt. Damit erfüllt dieser Artikel die rückseitig aufgeführten Kriterien.  
Die Firma ist ordentliches Mitglied der GEV.



Der Geschäftsführer  
Gemeinschaft Emissionskontrollierte Verlegewerkstoffe,  
Klebstoffe und Bauprodukte e.V.  
Völklinger Straße 4 · D-40219 Düsseldorf

**OM098 27.01.2026**  
gültig bis 27.01.2031

## Hinweise zu den Voraussetzungen über die Vergabe der Lizenz für den EMICODE

Das gemäß vorseitiger Lizenz eingestufte Produkt hat nach der Satzung und den Richtlinien des Technischen Beirats der GEV u.a. den folgenden Kriterien zu genügen:

- Das Produkt entspricht allen gesetzlichen Bestimmungen, insbesondere denen des Chemikalienrechtes und seiner Verordnungen.
- Das Produkt ist nach der Definition der TRGS 610 lösemittelfrei, sofern es sich nicht um ein Oberflächenprodukt handelt. Soweit es einer Produktgruppe nach GISCODE zuzuordnen ist, wird diese angegeben.
- Für das Produkt wird ein Sicherheitsdatenblatt nach lokalem Recht in der jeweils aktuellen Fassung erstellt.
- Krebsverregende, erbgutverändernde oder fruchtschädigende Stoffe der Kategorien 1A und 1B werden dem Produkt bei der Herstellung nicht aktiv zugesetzt (Ausnahmeregelungen siehe Kapitel 3.1.2.2 der GEV-Einstufungskriterien).
- Die Prüfung des Produktes erfolgt nach der definierten „GEV-Prüfmethode“. Die VOC-Bestimmung wird dabei in einer Prüfkammer nach dem Tenax-Thermodesorptions-Verfahren mit nachgeschalteter GC/MS-Analyse durchgeführt.
- Die Einstufung in EMICODE-Klassen erfolgt entsprechend den nachstehenden Bezeichnungen und TVOC/TSVOC-Konzentrationsbereichen. Zur Produktkennzeichnung ist die zutreffende EMICODE-Klasse zu verwenden:

### 1) Verlegewerkstoffe, Klebstoffe und Bauprodukte

| Parameter  | EC 1 <sup>PLUS</sup>                                      | EC 1                    | EC 2                    |
|--|---|-------------------------|-------------------------|
|  | max. zulässige Konzentration [ $\mu\text{g}/\text{m}^3$ ] |                         |                         |
| TVOC nach 3 Tagen                                  | $\leq 750$  | $\leq 1000$             | $\leq 3000$             |
| TVOC nach 28 Tagen                                 | $\leq 60$   | $\leq 100$              | $\leq 300$              |
| TSVOC nach 28 Tagen                                | $\leq 40$   | $\leq 50$               | $\leq 100$              |
| R-Wert basierend auf AgBB-NIK-Werten nach 28 Tagen | $\leq 1$  | $\leq 1$                | -                       |
| Summe der nicht bewertbaren VOC                    | $\leq 40$   | -                       | -                       |
| Formaldehyd nach 3 Tagen                           | $\leq 50$   | $\leq 50$               | $\leq 50$               |
| Formaldehyd nach 28 Tagen                          | $\leq 10$   | $\leq 10$               | $\leq 10$               |
| Acetaldehyd nach 3 Tagen                           | $\leq 50$   | $\leq 50$               | $\leq 50$               |
| Summe von Form- und Acetaldehyd                    | $\leq 0,05 \text{ ppm}$                                   | $\leq 0,05 \text{ ppm}$ | $\leq 0,05 \text{ ppm}$ |
| Summe von flüchtigen K1A/K1B-Stoffen nach 3 Tagen  | < 10  | < 10                    | < 10                    |
| Jeder flüchtige K1A/K1B-Stoff nach 28 Tagen        | < 1   | < 1                     | < 1                     |

### 2) Oberflächenbehandlungsmittel für Parkett, mineralische Böden und elastische Bodenbeläge

| Parameter  | EC 1 <sup>PLUS</sup>                                      | EC 1                                | EC 2                                 |
|--|---|-------------------------------------|--------------------------------------|
|  | max. zulässige Konzentration [ $\mu\text{g}/\text{m}^3$ ] |                                     |                                      |
| Summe TVOC + TSVOC nach 28 Tagen                   | $\leq 100$<br>davon max.<br>40 SVOC                       | $\leq 150$<br>davon max.<br>50 SVOC | $\leq 400$<br>davon max.<br>100 SVOC |
| R-Wert basierend auf AgBB-NIK-Werten nach 28 Tagen | $\leq 1$  | $\leq 1$                            | -                                    |
| Summe der nicht bewertbaren VOC                    | $\leq 40$   | -                                   | -                                    |
| Formaldehyd nach 3 Tagen                           | $\leq 50$   | $\leq 50$                           | $\leq 50$                            |
| Formaldehyd nach 28 Tagen                          | $\leq 10$   | $\leq 10$                           | $\leq 10$                            |
| Acetaldehyd nach 3 Tagen                           | $\leq 50$   | $\leq 50$                           | $\leq 50$                            |
| Summe von Form- und Acetaldehyd                    | $\leq 0,05 \text{ ppm}$                                   | $\leq 0,05 \text{ ppm}$             | $\leq 0,05 \text{ ppm}$              |
| Summe von flüchtigen K1A/K1B-Stoffen nach 3 Tagen  | < 10  | < 10                                | < 10                                 |
| Jeder flüchtige K1A/K1B-Stoff nach 28 Tagen        | < 1   | < 1                                 | < 1                                  |

**Gemeinschaft Emissionskontrollierte  
Verlegewerkstoffe, Klebstoffe und Bauproekte e.V.**

Association for the Control of Emissions from Products  
for Flooring Installation, Adhesives and Building Materials



**Awarding of licence for the use of EMICODE**

Licence Number: 12989/10.10.13

For the product OTTOCOLL® M 550 HiTack

Of company Hermann Otto GmbH

Due to application date 26.01.2021

With reference to the classification in accordance with the directives as stipulated in § 10 of the GEV trademark constitution

on behalf of the GEV for the above mentioned product as per § 5, section 4 of the GEV trademark constitution is awarded the licence for the use of the GEV trademark



This product meets with the guidelines for the criteria of use listed reverse.  
The company is ordinary member of the GEV.

A handwritten signature in blue ink, appearing to read "Oliver Lees".

The Secretary General

Association for the Control of Emissions in Products  
for Flooring Installation, Adhesives and Building Materials (GEV)  
Völklinger Straße 4 · D-40219 Düsseldorf

**OM098 27.01.2026**  
valid until 27.01.2031

## Requirement guidelines for the awarding of the EMICODE licence

The product mentioned on the front side of the licence has to fulfil among others the following criteria in accordance with the Constitution and the guidelines of the Technical Council of the GEV:

- The product meets all the legal requirements, especially the chemical laws and their specifications.
- The product is solvent free as specified in chapter 2.4 of the "GEV Classification Criteria", except if it is a surface treatment product. If the product is assigned to a GISCODE product group then this can be labelled.
- A safety data sheet (SDS) according to local law in its respectively valid version is issued for the product.
- Carcinogenic, mutagenic, reprotoxic substances of the categories 1A or 1B are not actively added to the product during manufacture (for exemptions see chapter 3.1.2.2 of the "GEV Classification Criteria").
- The testing of the product is performed in accordance with the "GEV Testing Method". VOC determination is performed in a test chamber followed by the Tenax / thermal desorption procedures with subsequent GC/MS analysis.
- The assignment of an EMICODE class is performed according to the following criteria and TVOC/TSVOC concentration levels. The corresponding EMICODE class shall be used to label the product:

### 1) Installation products, adhesives and construction products

| Parameter  | EC 1 <sup>PLUS</sup>                                    | EC 1       | EC 2       |
|--|---|------------|------------|
|  | max. allowed concentration [ $\mu\text{g}/\text{m}^3$ ] |            |            |
| TVOC after 3 days                                    | ≤ 750   | ≤ 1000     | ≤ 3000     |
| TVOC after 28 days                                   | ≤ 60  | ≤ 100      | ≤ 300      |
| TSVOC after 28 days                                  | ≤ 40  | ≤ 50       | ≤ 100      |
| R value based on German AgBB LCI (NIK) after 28 days | ≤ 1   | ≤ 1        | -          |
| Sum of non-assessable VOC                            | ≤ 40  | -          | -          |
| Formaldehyde after 3 days                            | ≤ 50  | ≤ 50       | ≤ 50       |
| Formaldehyde after 28 days                           | ≤ 10  | ≤ 10       | ≤ 10       |
| Acetaldehyde after 3 days                            | ≤ 50  | ≤ 50       | ≤ 50       |
| Sum of form- and acetaldehyde                        | ≤ 0.05 ppm  | ≤ 0.05 ppm | ≤ 0.05 ppm |
| Sum of volatile C1A/C1B after 3 days                 | < 10  | < 10       | < 10       |
| Any volatile C1A/C1B after 28 days                   | < 1   | < 1        | < 1        |

### 2) Products for floor surface treatments for parquet, mineral floors and resilient floorings

| Parameter  | EC 1 <sup>PLUS</sup>                                    | EC 1                             | EC 2                              |
|--|---|----------------------------------|-----------------------------------|
|  | max. allowed concentration [ $\mu\text{g}/\text{m}^3$ ] |                                  |                                   |
| Sum TVOC + TSVOC after 28 days                       | ≤ 100<br>thereof max.<br>40 SVOC                        | ≤ 150<br>thereof max.<br>50 SVOC | ≤ 400<br>thereof max.<br>100 SVOC |
| R value based on German AgBB LCI (NIK) after 28 days | ≤ 1   | ≤ 1                              | -                                 |
| Sum of non-assessable VOC                            | ≤ 40  | -                                | -                                 |
| Formaldehyde after 3 days                            | ≤ 50  | ≤ 50                             | ≤ 50                              |
| Formaldehyde after 28 days                           | ≤ 10  | ≤ 10                             | ≤ 10                              |
| Acetaldehyde after 3 days                            | ≤ 50  | ≤ 50                             | ≤ 50                              |
| Sum of form- and acetaldehyde                        | ≤ 0.05 ppm  | ≤ 0.05 ppm                       | ≤ 0.05 ppm                        |
| Sum of volatile C1A/C1B after 3 days                 | < 10  | < 10                             | < 10                              |
| Any volatile C1A/C1B after 28 days                   | < 1   | < 1                              | < 1                               |