



**CRADLE TO CRADLE CERTIFIED™
PRODUCT STANDARD
VERSION 4**

**VOLATILE ORGANIC COMPOUND (VOC)
EMISSIONS TESTING**

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Demonstrating Low VOC Emissions

For the Silver level [in Material Health](#), one of the following or an equivalent must be used to demonstrate [low VOC emissions](#):

1. Schemes that are recognized at the general level by BREEAM for the VOC Emissions from Building Products credit. Formaldehyde emissions must be $\leq 10 \mu\text{g}/\text{m}^3$ at 28 days or sooner following storage in a ventilated test chamber. [REF: GN22: BREEAM Recognized Schemes for Emissions from Building Products, Table 2, version 2.1 of October 2016]
2. [The emission limits and testing requirements in the BREEAM International New Construction 2016 Technical Standard](#). Formaldehyde emissions must be $\leq 10 \mu\text{g}/\text{m}^3$ at 28 days or sooner following storage in a ventilated test chamber. [REF: BREEAM International New Construction 2016 Technical Standard, Hea 02 Indoor Air Quality, table 17: "[Emission criteria by product type](#)".]
3. Certifications and labels recognized for LEED v4 or later EQ Credit Low-Emitting Materials. [REF: LEED v4 EQ Credit Low-Emitting Materials Third Party Certifications and Labels - version of June 2017 or later] Any mentioned additional requirements, supplemental to the respective program must also be fulfilled.
4. Per LEED v4 or LEED v4.1 General emissions evaluation, option 1 - compliance with CDPH Standard Method v1.1 or later, including a statement of the exposure scenarios and disclosure of the TVOC range.
5. Per LEED v4 or LEED v4.1 General emissions evaluation, option 2 - compliance with AgBB (2015 or later), including formaldehyde emissions $\leq 10 \mu\text{g}/\text{m}^3$. The TVOC range must be disclosed if complying with LEED v4.1.
6. [Schemes and labels listed in DGNB System 2018, ENV 1.2 Local and Environmental Impact, Appendix 1 Criteria Matrix as follows \(note: this also fulfills the Gold level requirement below\)](#):
 - a. [For textile floor coverings \(line 6\): compliance with any quality level and demonstration that formaldehyde is \$\leq 10 \mu\text{g}/\text{m}^3\$ at 28 days or sooner following storage in a ventilated test chamber.](#)
 - b. [For primers, precoats, fillers, and adhesives under wall and floor coverings \(line 8\), compliance with quality levels 2, 3, or 4.](#)
 - c. [For barrier coatings, resin screeds, and seals under tiles \(line 9\), compliance with quality levels 3 or 4.](#)
 - d. [For polyurethane and silane modified polymers used as sealing compounds \(line 11\), compliance with quality levels 3 or 4.](#)
7. [For resilient/elastic floor coverings: Compliance with RAL UZ 120 and formaldehyde \$\leq 10 \mu\text{g}/\text{m}^3\$ at 28 days or sooner following storage in a ventilated test chamber \(note: this also fulfills the Gold level requirement below\).](#)
8. For composite wood (not in finished products such as furniture or flooring): Compliance with CARB ULEF or NAF requirements, or 100% of the European E1 formaldehyde class as tested per EN 717 or EN 16516.
9. For furniture: Compliance with ANSI/BIFMA e3-2014 or later version Furniture Sustainability Standard, Section 7.6.2 or 7.6.3 (note: this also fulfills the Gold level requirement below).

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Demonstrating Very Low to No VOC Emissions

For the Gold and Platinum levels [in Material Health](#), one of the following or an equivalent must be used to demonstrate very low to no VOC emissions:

1. Schemes that are recognized at the exemplary level by BREEAM for VOC Emissions from Building Products credit. [REF: GN22: BREEAM Recognized Schemes for Emissions from Building Products, Table 2, version 2.1 of October 2016 or later]
2. Schemes that are recognized at the exemplary level by the BREEAM International New Construction 2016 or later Technical Standard. [REF: BREEAM International New Construction 2016 or later Technical Standard, Hea 02 Indoor Air Quality, table 17]
3. Per LEED v4 or LEED v4.1 General emissions evaluation, option 1 - compliance with CDPH Standard Method v1.1 or later and TVOC emissions no higher than 0.5 mg/m³ (500 µg/m³) at a time point no later than 14 days of storage in a ventilated test chamber, or after 10 days conditioning and 4 days of storage in a ventilated test chamber.
4. Per LEED v4 or LEED v4.1 General emissions evaluation, option 2 - compliance with AgBB (2015 or later), including formaldehyde emissions ≤10 µg/m³ and TVOC emissions ≤ 0.3 mg/m³ (300 µg/m³) at a time point not later than 28 days of storage in a ventilated test chamber.
5. Schemes and labels listed in DGNB System 2018, ENV 1.2 Local and Environmental Impact, Appendix 1 Criteria Matrix as follows:
 - a. For textile floor coverings [\(line 6\)](#): compliance with any quality level and demonstration that formaldehyde is ≤10 µg/m³ at 28 days or sooner following storage in a ventilated test chamber.
 - b. For primers, precoats, fillers, and adhesives under wall and floor coverings [\(line 8\)](#), compliance with quality levels 2, 3, or 4.
 - c. For barrier coatings, resin screeds, and seals under tiles [\(line 9\)](#), compliance with quality levels 3 or 4.
 - d. For polyurethane and silane modified polymers used as sealing compounds [\(line 11\)](#), compliance with quality levels 3 or 4.
6. For resilient floor coverings: Compliance with RAL UZ 120 and formaldehyde ≤10 µg/m³ at 28 days or sooner following storage in a ventilated test chamber.
7. For composite wood (not in finished products such as furniture or flooring): Compliance with CARB ULEF or NAF requirements, or 50% of the European E1 formaldehyde class as tested per EN 717 or EN 16516.
8. For furniture: Compliance with ANSI/BIFMA e3-2014 or later version Furniture Sustainability Standard, Sections 7.6.2 or 7.6.3.

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