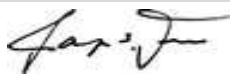




COMPLIANCE TESTED by berkeley analytical

VOC Emission Test Certificate

Product Name: Titebond Contractor Grade Heavy Duty Construction Adhesive

Product Sample Information		Certificate Information	
Company:	Franklin International	Certificate No:	240614-05
Company Website:	www.franklininternational.com	Certified By:	 Raja S. Tannous, Laboratory Director
Product Type:	Wall Adhesive	Date:	June 14, 2024
Date Produced:	4/4/2024		

Reference Standard: California Department of Public Health CDPH/EHLB/Standard Method Version 1.2, 2017
(Emission testing method for CA Specification 01350)

Acceptance Criteria and Results Demonstrating Compliance of Product Sample to Referenced Standard:

Exposure Scenario ¹	Individual VOCs of Concern ²		Formaldehyde ³		TVOC ⁴
	Criterion	Compliant?	Criterion	Compliant?	Range
School Classroom	≤½ Chronic REL	YES	≤9.0 µg/m ³	YES	≤ 0.5 mg/m ³
Private Office	≤½ Chronic REL	YES	≤9.0 µg/m ³	YES	≤ 0.5 mg/m ³

Product Coverage⁵: 217 g/m²

1. Exposure scenarios & product quantities for classroom & office are defined in Tables 4-2 – 4-5 (CDPH Std. Mtd. V1.2-2017)
2. Maximum allowable concentrations of individual target VOCs are specified in Table 4-1 (*ibid.*)
3. Maximum allowable formaldehyde concentration is ≤9 µg/m³, effective Jan 1, 2012; previous limit was ≤16.5 µg/m³ (*ibid.*)
4. Informative only; predicted TVOC Range in three categories, i.e., ≤0.5 mg/m³, >0.5 – 4.9 mg/m³, and ≥5.0 mg/m³
5. Informative and applicable only to tests of wet-applied products; grams of sample applied per square meter of substrate

Standards & Codes Recognizing CDPH Standard Method V1.2 (partial list)

- USGBC LEED Version 4/4.1, BD&C, ID&C, Residential BD&C Multifamily
- The WELL Building Standard, WELL v2, Feature X06
- ANSI/GBI 01-2019 Green Globes Assessment Protocol

Narrative: Franklin International selected a sample representative of its Titebond Contractor Grade Heavy Duty Construction Adhesive - 7471 product and submitted it on 5/22/2024 for testing. Berkeley Analytical measured and evaluated the emissions of VOCs from this sample following CDPH/EHLB/Standard Method V1.2-2017. The results of the test are presented in Berkeley Analytical report, 338-069-01A-Jun1424.

Berkeley Analytical is an independent, third-party laboratory specializing in the analysis of organic chemicals emitted by and contained in building products, finishes, furniture, and consumer products. We are an ISO/IEC 17025 accredited laboratory (IAS, [TL-383](#)); all standards used in performing this test are in Berkeley Analytical's scope of accreditation.

DISCLAIMER: THIS CERTIFICATE OF COMPLIANCE AFFIRMS THAT: 1) A SAMPLE OF THE LISTED PRODUCT WAS TESTED ACCORDING TO THE REFERENCED STANDARD; 2) THE MEASURED VOC EMISSIONS FROM THE SAMPLE WERE EVALUATED FOR THE DEFINED EXPOSURE SCENARIO(S); AND 3) THE RESULTS MEET THE ACCEPTANCE CRITERIA OF THE REFERENCED STANDARD(S). BERKELEY ANALYTICAL IS NOT RESPONSIBLE FOR ANY CLAIMS REGARDING A PRODUCT OR PRODUCTS ENTERED INTO COMMERCE THAT MAY BE BASED ON THIS TEST. BERKELEY ANALYTICAL PROVIDES THIS CERTIFICATE OF COMPLIANCE "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

Franklin International

May 17, 2024

Dear Mr. Hodgson,

RE: VOC Emission Testing; CDPH Standard Method V1.2; non-full spread adhesive/sealant application calculations

Below is the rationale and the calculations for the quantity of Franklin International's Titebond Contractor Grade Heavy Duty Construction Adhesive that would be used in the standard classroom and standard private office defined in CDPH Standard Method V1.2.

This is a multipurpose adhesive, so worst case scenario is used as a drywall adhesive for applying drywalls to the walls of the room.

A typical drywall sheet is panel is 8 feet long x 4 feet wide.

Please note that this product is not used at the top and bottom room perimeters-that requires a sealant (which has movement resilience to prevent cracking with building settling), which is a different product.

Classroom - Room size is 40 feet long x 24 feet wide and 12 feet high

A 40 foot long wall with 12 foot high ceilings requires 15 sheets x 2 for each long side of the room, so 30 panels. Similarly a 24 foot long room would require 9 sheets x 2 for each short side of the room so 18 sheets.

Total sheets applied is 48.

Adhesive is applied by extruding a 3/8 inch bead (worst case scenario) across the 4 foot (48 inches) wide sheet at the ends of each sheet and at the joists or studs placement points of the wall down the width of the 4 foot sheet, so 7 beads per sheet. The volume of a single bead is calculated as follows: A bead is a cylinder in form.

Bead diameter is 3/8 inch, so the radius is 3/16 inch or 0.1875 inch.

Bead length (or cylinder height) is 48 inches.

The Volume of the cylinder is calculated according to this formula:

$$V = \pi r^2 h \quad V = 3.141592654 \times (0.1875)^2 \times 48 = 5.301 \text{ cubic inches}$$

5.301 cubic inches is 86.868 cubic centimeters (cc)

86.868 cc/bead x 7 beads = 608.076 cc of adhesive /sheet

48 sheets x 608.076 cc is 29187.648 cc

1 cc is equivalent to 1 ml in volume so 29,187.648 mL or 29.188 L

There are 3.78 L per gallon so 29.188 = 7.72 gallons of adhesive

The adhesive density is 10.84 lbs./gallon.

Thus, the weight of adhesive used in the classroom is 83.69 lbs.

The Office scenario is on the next page.

Franklin International

Office – Room size is 12 feet long x 10 feet wide x 12 feet high.

A 12 foot long wall requires 4.5 sheets x 2 for each long side of the room or 9 sheets.
Similarly, a 10 foot wall requires 3.75 sheets x 2 for each short side of the room, or 7.5 sheets.
Total sheets applied is 16.5

Using the application information above, $16.5 \text{ sheets} \times 608.076 \text{ cc/sheet} = 10,033.254 \text{ cc}$
1 cc is equivalent to 1 ml in volume, so $10,033.254 \text{ cc} = 10,033.254 \text{ mL}$ or 10.03 L.
There are 3.78 L per gallon, so $10.03 \text{ L} = 2.65 \text{ gallons}$ of adhesive used.
The adhesive density is 10.84 lbs./gallon.
Thus, the weight of adhesive used in the office is 28.73 lbs.

I hope this information meets your needs. Please let me know if you have any additional questions or concerns. Thank you for your continued support of Franklin International. We truly value your business.

Regards,



Mary A. Sanger
Product Stewardship Manager

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