

1. Test method

• ASTM D5116-97

Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products.

• Test sample

Sample selected for testing is representative of the product manufactured and produced under typical operating conditions.

• Test procedure

The principle of the test is to determine the specific emission rate of VOCs emitted from prepared specimens of building products. The test is conducted in a small-scale environmental chamber at specified constant conditions of temperature, relative humidity, ventilation rate, and product loading factor.

• Chamber conditions for test period

PARAMETER	SYMBOL	UNITS	VALUE
Product exposed area	Ac	m ²	0.0316
Chamber volume	Vc	m ³	0.067
Loading ratio	Lc	m ² m ⁻³	0.47
Inlet air flow rate	Q	m ³ m ⁻¹	0.067
Ventilation rate	ac	h ⁻¹	1
Temperature		°C	23.3
Relative humidity		%	48.6

• Analytical methods

TVOC (Total Volatile Organic Compounds) : quantified by GC/MS TIC method using toluene as calibration reference.

Formaldehyde and acetaldehyde: volatile aldehydes were quantified by HPLC following ASTM Method D 5197-97.

Individual VOCs, other than formaldehyde and acetaldehyde, were quantified by thermal desorption GC/MS following EPA Methods TO-1 and TO-17. Compounds are quantified using multipoint calibrations prepared with pure substances.

2. Test result

• Emission Test results for individual VOCs

SUBSTANCE	CAS	CHAMBER CONCENTRATION(μg m ⁻³)	EMISSION FACTOR(μg m ⁻² h ⁻¹)
24 hour Test Period			
Methyl Methacrylate	80-62-6	6.6	14.0

• TOVC Chamber concentrations and emission factors

TEST DURATION	CHAMBER CONCENTRATION (μg m ⁻³)	EMISSION FACTOR (μg m ⁻² h ⁻¹)
24 hours	LQ	Not applicable

"LQ" indicates calculated value is below quantitation base on concentration LOQ (Lower Limit of quantitation).

LOQ for TVOC is 20 μg m⁻³. Most standards and guidelines (Ex: EPA, OSHA, etc.) consider 200-500 μg m⁻³ TVOC an acceptable level in buildings. Levels higher than this may result in irritation to some occupants.

This Technical Bulletin is intended to provide guidelines for optimal fabrication, installation, and performance of LOTTE ADVANCED MATERIALS products mentioned. Though the information contained herein is deemed reliable, none of the contents--including but not limited to the instructions, techniques, graphics, and recommendations--is to be understood as implying legal liability of fitness for a specific purpose, any other type of warranty, or being complete or absolute in its range and nature of information.

Depending on the user's particular application, all necessary measures must be taken to verify and test the adequacy for such needs or application. Any information or recommendation herein is strictly for purposes of reference and as such, LOTTE ADVANCED MATERIALS assumes no responsibility for its suitability or accuracy or the use of such information for products other than LOTTE ADVANCED MATERIALS Staron® solid surfaces & Radianz® quartz surfaces.