(Total Volatile Organic Compounds)

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}	1.0
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 concentrat ions 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.