

“Foreathe Diatomite Coating”

Removal rate test

Supplier: EZ-LIFE CO., Ltd. Product Country: Taiwan

Test Report

Sponsor : EZ-LIFE CO., Ltd.
Testing Institution : SGS Taiwan Ltd.
Report No. : UG/2016/C0038

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ADDRESS INFORMATION

Testing Facility/Test Site

Name: SGS TAIWAN LTD.
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Study Director

Name: Shinjyh, Chen
Address: No. 38, Wu Chyuan 7th Rd., New Taipei Industrial Park, Wu Ku Dist.,
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Sponsor

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SIGNATURE OF STUDY PERSONNEL

Removal rate test

Study Director:

Shinjyh, Chen / SGS Taiwan Ltd.

Date Completed

Facility Manager:

Yuanmin Wen / SGS Taiwan Ltd.

Date Completed

Objective

This test procedure is based on the in house method. Determine the Formaldehyde(HCHO) gas compound removal rate of the product "Foreathe Diatomite Coating" which provide by the client "EZ-LIFE CO., Ltd." In the test, the product is coated on a piece of foil with 10cm * 10cm of area, dried, and placed in the tedlar bag, then the gas standard chemical are injected in to the bag, analysis was performed by the equipment. Determine the removal rate by comparing the result of control and experiment group.

Experimental Design

1. Instrument

Name	Brand/Lot.	Purpose
Sampling pump	GASTEC	Gas sampling
Detector tube	GASTEC/91L	Formaldehyde testing
10L gas sampling bag	Tedlar Bag	Testing environment

2. Reagent

Compound	Brand	Purpose
50ppmv Formaldehyde	ISGAS ASIA	Standard chemical

3. Product/instrument preparation

I. Production preparation

(1) -

II. Parameter of instrument

- (1) Before testing, check the detector is leaking or not according to the operation manual.
- (2) Sampling volume: 100 mL air sample in the chamber.
- (3) Clean the bag with nitrogen at high temperature and check for leaks.

III. Testing procedure

Formaldehyde removal rate testing

- (1) Coat the product on a piece of foil with 10cm * 10cm of area, then place it in the bag.
- (2) Inject 50 ppmv Formaldehyde and nitrogen mixed (1:1.5) into the bag for 12 min at flow rate 0.5L/min, the concentration of Formaldehyde in the bag will be 20 ppmv.
- (3) Sampling the gas in the bag at time 0, 2, and 24hrs after experiment starting.
- (4) The concentration of formaldehyde in the bag was determined by detector.

4. Quality control

Carry out the same procedure of procedure III but excluding the product as control group.

Data calculation

The removal rate(γ_t) and Natural attenuation rate(R_t) can be calculated according formula

$$R_t = \frac{(N_{0\text{-control group}} - N_{t\text{-control group}})}{N_{0\text{-control group}}} * 100\%$$

R_t : Natural attenuation rate of time t (%)

$N_{0\text{-control group}}$: initial concentration of compound of control group(ppmv)

$N_{t\text{-control group}}$: time t concentration of compound of control group (ppmv)

$$\gamma_t = \frac{(n_{t\text{-control group}} - n_{t\text{-experiment group}})}{n_{t\text{-control group}}} * 100\%$$

where:

γ_t : Removal rate of time t (%)

$n_{t\text{-control group}}$: compound concentration of control group(ppmv)

$n_{t\text{-experiment group}}$: compound concentration of experiment group (ppmv)

Sampling time t (hr)	control group (ppmv)	experiment group (ppmv)
0	20.0	20.0
2	19.5	N.D.
24	17.5	N.D.

Sampling time t (hr)	Natural attenuation rate (%)	Removal rate (%)
0	0.00	0.00
2	2.50	>99.9
24	12.5	>99.9

Test result

Removal rate (%) of Formaldehyde(HCHO)

Time period (hr)	Removal rate (%)
0	0.00
2	>99.9
24	>99.9

Note1: Limit of Quantification (LOQ)=0.01 ppmv

Note2: The testing result will be “N.D.” for the value less than LOQ

TEST ARTICLE PHOTO

UG/2016/C0038

