



For removal aldehyde type gas

Odor Eliminating fluid S-3T

Learn about the lasting durability

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MARUSYO SANGYO CO.,LTD.



S-3T How to calculate Lasting Durability

Odor Eliminating fluid S (hereafter referred to as S-3T) is a coating agent that can remove aldehydes through an adsorption reaction with formaldehyde, acetaldehyde, and other chemical substances that have an aldehyde group (R-CHO). According to this mechanism, S-3T also has the disadvantage that it becomes difficult to maintain its effect if the limit adsorption capacity is exceeded. In addition, the indoor concentration of formaldehyde varies depending on the location, and the effect may not be seen with a same amount of application. For this reason, we have built a system that **automatically calculates the total amount of formaldehyde that can be removed** by measuring and setting the amount of aldehyde adsorbed per square meter when S-3T is applied, and **by changing the amount of application depending on the concentration of aldehyde in the room.** We calculate the sustain period.



Standard value calculation of formaldehyde removal amount (At the factory, by machinery coating)

試験成績書 Test Result data

1. 成績書番号 : CT20-091292K 1. Certification No: CT20-091292K
2. 依頼者
会社名 : (株)オーガニックトゥリー
住所 : 忠清北道忠州市殿政面栗陵里100-7
3. 試験期間 : 2020年08月03日 ~ 2020年08月14日 3. Test period : 2020 Aug 3rd ~ 2020 Aug 14th
4. 試験成績書の用途 : 品質管理 4. End usage of the test result : To control product quality
5. 試料名 : 木プラス壁紙 5. Specimen : Wallpaper
6. 試験方法
(1) KS I 3546:2012 6. Test method (1) KS I 3546:2012

7. 試験結果 7. Test result 1) Wallpaper

Item	試験項目	Unit	Test method	Test Result	NOTE	Test site A (Korea)
1day absorption of formaldehyde		%	(1)	89.1	(25.0±1.0)℃ (50±3)%R.H.	A
3days absorption of formaldehyde		%	(1)	83.1		
5days absorption of formaldehyde		%	(1)	81.7		
7days absorption of formaldehyde		%	(1)	80.4		
積算吸着量		µg/m ²	(1)	7 759		
再放出		mg/(m ² ·h)	(1)	0.001		

※試験場所

A : 京畿道軍浦市工團路149軍浦ヒュンダイ 1' VALLEY805号 ※Test Site : Korea

確認	作成者姓名	イホンヨル	技術責任者姓名	イ・ジュンギョ
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2020年08月14日

韓国認定機構 認定 韓国建設生活環境試験研究院長

Calculation from cumulative formaldehyde adsorption amount

- Cumulative adsorption amount: 7759 µg/m²
- Performance deterioration rate after adsorption: 8.7%

※Usage amount of S-3T : 15±1g/m²

- ① Amount of formaldehyde adsorbed when performance is reduced by 1%
Formula (1) $7759/8.7 = 891.83 \mu\text{g} / \text{m}^2 \cdot \%$
- ② Adsorption amount from the initial value of 89.1% to 50% when performance drops
Formula (2) $89.1-50 \times 891.83 = 34,870.55 \mu\text{g} / \text{m}^2 = 34.9 \text{ mg} / \text{m}^2$
- ③ Formaldehyde removal standard value

34.9mg/m²

Attachment 1 :

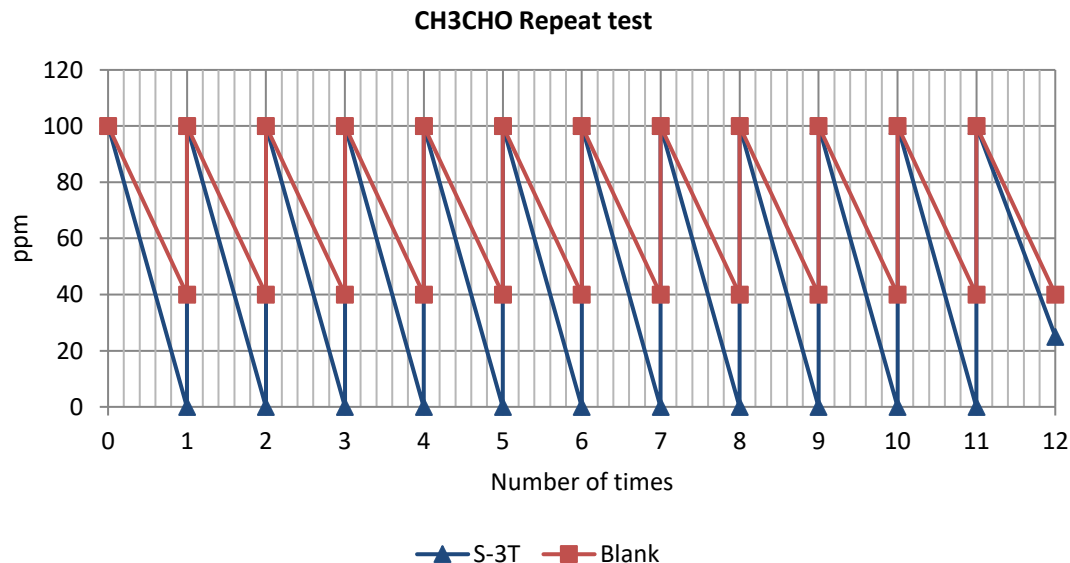
Calculation of formaldehyde removal amount by chamber method
(Korea data)

S-3T Repeat test to confirm absorption efficacy (Internal test, Hand-painted)

• Test method

1. Odor eliminating fluid S-3T (Removal aldehydes type) Removal performance test
 2. Test item : Non-treatment test paper 0.0048m² (80mm x 60mm) , Apply S-3T (Usage amount : 25g/1m²)
 3. Test flask : 1 L flask
 4. Test Gas : Acetaldehyde
 5. Test method : Fill Acetaldehyde 100ppm into 1L flask and put test paper in the flask then place them at 50 deg CX 24hours.
- Confirm the reduction ratio \downarrow of acetaldehyde in flask

• Test result



• Test Photo



Calculation of standard value for formaldehyde removal amount

Calculate the standard value for formaldehyde removed per 1m² when used in on-site coating application

- ① Cumulated removal amount of acetaldehyde gas by S-3T(At 11 times)

Formula(3) : S-3T removal total amount 1100ppm – Blank Residual amount 60ppm = 440ppm(/1L·0.0048m²)

- ② Conversion amount from 0.0048m² to 1m²

Formula (4) : $440 \times \frac{1m^2}{0.0048m^2} = 91,667 \text{ ppm/m}^2$

- ② Removal amount of acetaldehyde

Formula (5) : $91,667 \times \frac{44.1}{22.4} \times \frac{273}{(273+20)} \times \frac{1013}{1013} = 168.15 \text{ mg/m}^2$

- ③ Removal amount of formaldehyde

Formula(6) : $91,667 \times \frac{30}{22.4} \times \frac{273}{(273+20)} \times \frac{1013}{1013} = 114.39 \text{ mg/m}^2$

- ④ Conversion ratio from Acetaldehyde to Formaldehyde

Formula(7) : $114.39 \text{ mg/L} \times (30/44.1) = 77.8 \text{ mg/m}^2$

- ⑤ Safety ratio by usage amount

(At not standard level 25g/m², but 60% reduced usage amount 15g/m²)

Formula (8) : $77.8 \text{ mg/m}^2 \times 60\% = 46.68\text{mg/m}^2$

- ⑥ Safety level (Work efficiency about 75%)

Formula(9) : $46.68\text{mg/m}^2 \times 75\% = 35.01\text{mg/m}^2$

- ⑥ Maximum removal standard amount of formaldehyde

35.01mg/m² (Wallpaper : 34.9mg/)

Adopted value of 35mg / 1m² · 15g of limit adsorption performance value

※ Standard usage amount is 15g/m² though, the limit adsorption performance value is changed depends on the usage amount.

NOTE

44.1 (g)	Molar mass of acetaldehyde/1 mol
30 (g)	Molar mass of formaldehyde/1mol
22.4(L)	At 0°C, 1pa molecule amount /1mol
273 (K)	Absolute temperature. 0°C=273.15K. T°C=(273+T)
20 (°C)	Test temperature
1013 (hPa)	1Pa (Test environment)

