

Test Report on Laundry Mag-Chan

Miyamoto S-S Co., Ltd.

Theme of the test	Test for verifying the ability to decompose odor components on laundry		Date created	2014/2/11	
Test period	February 4, 2014	Implementation bodies	Hitachi Chemical Techno Service Co., Ltd.		Report No. KN-14005-1

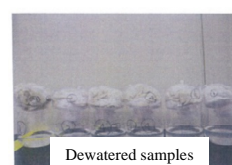
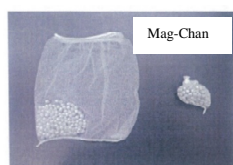
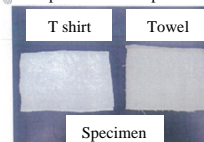
(1) Test objective

Determine whether an aqueous solution of magnesium hydroxide (weak alkaline) containing hydrogen generated with the aid of the Laundry Mag-Chan shows an inhibitory effect on odor components from general clothes (odors from indoor dried clothes). Subject two different comparative controls, aqueous solutions of powder and liquid detergents, to the same test. Use acetic acid, propionic acid, butyric acid, isovaleric acid, valeric acid, and heptanoic acid as 6 different odor components from indoor dried clothes.

(2) Outline of the test conditions

		(i)	(ii)	(iii)	(iv)	(v)	(vi)
Outline of the test		Ref	Mag-Chan only	[Powder detergent] Attack Bio EX		[Liquid detergent] Ultra Attack Neo	
				Laundry detergent only	Laundry detergent + Mag-Chan	Laundry detergent only	Laundry detergent + Mag-Chan
Details of the test	Amount of water	1 L	1 L	1 L	1 L	1 L	1 L
	Quantity of specimens	50 g	50 g	50 g	50 g	50 g	50 g
	Amount of detergent ^{*1}	-	-	0.67 g	0.67 g	0.33 g	0.33 g
	Mag-Chan ^{*2}	-	20 g	-	20 g	-	20 g
	Added reagent (odor substance)	0.5 mL each	0.5 mL each	0.5 mL each	0.5 mL each	0.5 mL each	0.5 mL each
Washing	Shaking conditions	Number of times of washing by shaking: Once (shaken for 20 minutes at 150 rpm at room temperature)					
	Rinsing conditions	Number of times of rinsing: Rinsed once in pre-filled water (shaken for 15 minutes at 150 rpm at room temperature)					
	Dewatering conditions	Dewatered by centrifuge (1,000 rpm, 10 minutes)					
	Indoor drying	Specimens to be left in bags					

Preparation of samples



Washing



Indoor drying



Pack half-dried laundry samples in bags, fill each bag with 3 L of clean air, and leave the bags to stand at room temperature for approx. 20 hours.

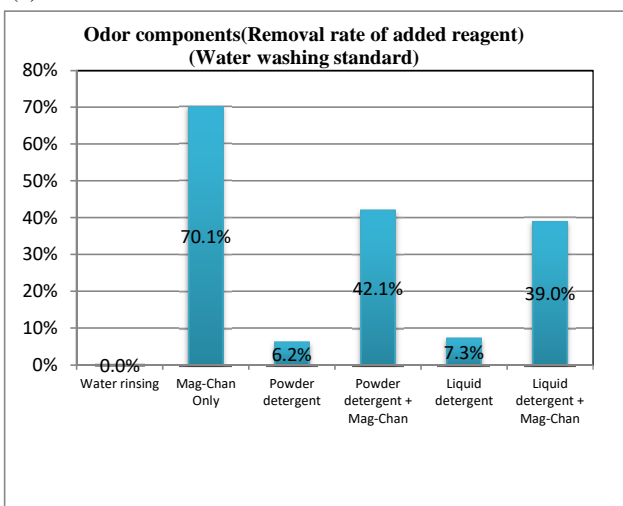
Measurement



* Pass one liter of gas in each bag through a sampling tube for adsorptive collection.

* Subject the sampling tubes to thermal desorption gas chromatograph mass spectrometry (TD-GC/MS) to evaluate the inhibitory effect of the Laundry Mag-Chan on odors from indoor-dried laundry.

(3) Measurement results



Amount of added reagent released from indoor-dried specimen (mg/m³)

	Water rinsing	Mag-Chan Only	Powder detergent	Powder detergent + Mag-Chan	Liquid detergent	Liquid detergent + Mag-Chan
Acetic acid	1.2	0.3	1.0	0.6	1.0	0.6
Propionic acid	2.6	0.5	2.3	1.0	1.9	1.1
Butyric acid	4.1	1.0	3.8	1.8	3.2	2.0
Isovaleric acid	7.9	1.3	7.1	3.6	7.2	5.0
Valeric acid	6.2	2.5	5.5	3.4	4.0	2.9
Heptanoic acid	15.0	5.5	15.0	11.0	17.0	11.0
Remaining amount of added reagents (total)	37.0	11.1	34.7	21.4	34.3	22.6
Removal rate of water washing standard	Standard	70.1%	6.2%	42.1%	7.3%	39.0%

Comments on the test results

The test results reveal that the Mag-Chan decomposes odor components most efficiently when used alone. When used in combination with detergents, the Mag-Chan showed a high yet lower efficiency in odor component decomposition than when used alone, probably because the fragrance components of the detergents wrapped around the odor components from the laundry.

Implementation supervisor



Testing body

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