



No: 050522/VCCM

May 20, 2022

Test Report

Client: Branch of Panasonic Appliances Vietnam Co., Ltd. in Hung Yen**Address:** Plot G2, Thang Long Industrial Park II, Lieu Xa Commune, Yen My District, Hung Yen Province, Vietnam**Test sample:**

Panasonic washing machine model NA-V10FR1, made in Vietnam washing load of 0.5kg for Hygiene Dry 180 min course

Test cloth: cotton knit (10cm x 10cm) and cotton knit 0.5kg/machine.

Test items:Test bacterial elimination efficiency for function Hygiene Dry of Front load washing machine NA-V10FR1 series (Made in Vietnam) with 2 types of bacteria *Escherichia coli* and *Staphylococcus aureus*.**Test method:**

Protocol of Panasonic Appliances Vietnam Co., Ltd. Fabric sample washed in Operating condition of Hygiene Dry function.

Sample retention time: No**Test place:** Branch of Panasonic Appliances Vietnam Co., Ltd. in Hung Yen.

Plot G2, Thang Long Industrial Park II, Lieu Xa Commune, Yen My District, Hung Yen Province, Vietnam

Test agency: Center for Culture Collection and Genetic Resource Conservation of Microorganisms, Institute of Biotechnology**Test date:** 06/04/2022 – 20/05/2022**Test procedure:**The test organism (*Escherichia coli* and *Staphylococcus aureus*) were cultured in nutrient medium liquid at 37° for 24 hours (in shaking speed 150 rpm) to give a concentration of 10⁷ to 10⁸ CFU/ml.

A pieces of the test cotton cloth was sterilized in an autoclave at 121oC, 1 atm for 15 minutes and 3 ml of the cell suspensiom was dropped onto it.

The sterilization of washing machine and water supply route by sodium hypochlorite liquid: (1) Pour chlorine bleach 300ml into about 70L water in supply bucket. Then supply water into wash tub up to a maximum lever by water supply route and start



bacteria elimination; (2) Rinsing washing machine by water again (similar as (1)); (3) Add sodium thiosulfate into 70L water (about 0,002%) to neutralize residual chlorine, rinse the water supply route and wash tub similar as (1) so that residual chlorine concentration in water of wash tub ≤ 0.1 ppm.

The Dummy Laundry was placed in the wash tub of the sample. After washing daily wash mode, three test pieces were fastened to the Dummy Laundry with safety pin at three points. Drying in 2 modes of Bacteria Elimination course: (1) Hygiene Dry (57.5°C in 3 hours); (2) No dry (time as Hygiene Dry). The water supplied used in the washing process was neutralized residual chlorine by sodium thiosulfate. After washing, the test pieces were taken out, each piece of cloth was washed in 100 ml of distilled water. The obtained counts were converted into the total viable cell count of three test pieces.

Test results:

Test organism	With Hygiene Dry		Without Hygiene Dry		With Hygiene Dry	Without Hygiene Dry	Degree of reduction
	Viable cell count (CFU/ml)		Viable cell count (CFU/ml)				
	Before operation	After operation	Before operation	After operation			
	A	B	C	D			
<i>Escherichia coli</i> ATCC29922	2.03×10^8	7.685×10^5	2.03×10^8	8.365×10^7	2.38	0.34	2.03
<i>Staphylococcus aureus</i> ATCC25923	5.56×10^7	9.25×10^5	1.32×10^8	3.42×10^7	1.78	0.21	1.57
The antibacterial effect is achieved if the degree of reduction $(G) \geq 2$					<i>Escherichia coli</i> elimination ratio		99.0813
					<i>Staphylococcus aureus</i> elimination ratio		97.2953

Note:

- The results only apply to tested sample
- Name of sample and Name of client written according to client 's request

Institute of Biotechnology

Center for Culture Collection and Genetic Resource Conservation of Microorganisms

Tester



PHÍ QUYẾT TIẾN
Phí Quyết Tiến

Vice Director. Le Thi Minh Thanh

Trinh Thi Thu Ha