Functionality evaluation for Textile products: Deodorant test

【Test method for each type】

The testing gas is designated by six categories of odor in the standards of deodorant finished product by Japan Textile Evaluation Technology Council (JTETC).

Similar international standard: ISO 17299-1,2,3

Category	Testing gas
Sweat odor	Ammonia, Acetic acid, Isovaleric acid
Aging odor	Ammonia, Acetic acid, Isovaleric acid, Nonanal
Excrement odor	Ammonia, Acetic acid, Methyl mercaptan, Hydrogen sulfide, Indole
Cigarette odor	Ammonia, Acetic acid, Acetaldehyde, Pyridine, Hydrogen sulfide
Garbage odor	Ammonia, Methyl mercaptan, Hydrogen sulfide, Trimethylamine
Ammonia odor	Ammonia

Example: If the product says “Deodorant effect (Sweat odor), we carry out 3 types of tests such as Ammonia, Acetic acid, Isovaleric acid.

【Overview】

① **Instrument-analysis method**

Detector tube method	1. Place the determined amount of specimen into a 5L plastic bag and insert 3L of test gas adjusted to the specified concentration. 2. 2 hours later, detect the concentration of residual master gas in the plastic bag.
Gas chromatography (GC) method	1. Place the specimen in a 500ml conical flask and insert 5μL of the gas component ethanol solution adjusted to the specified concentration. 2. After leaving it still for 2 hours, measure the concentration of residual gas using the gas chromatogram.

② **Sensory test**

1. This test is carried out by evaluating according to the actual sense of smell by a human. With the specimen hanging, insert the odor component standard solution or standard gas into the conical flask. At the same time, insert standard solution or standard gas for the standard odor gas into an empty conical flask.
2. Stir each flask and after leaving it still for 2 hours, compare the standard odor with the odor component on the exposed specimen (=fabric odor) and the odor in the flask (atmospheric odor), as well as the standard odor component gas, and then give the judgment.

* If the odor intensity exceeds the standard odor component, it will be judged as "strong judgement". If the odor intensity falls below the standard odor component, it will be judged as "weak judgement." The panelist (judges) will be six people.

【Evaluation / Reference value】

① **Instrument analysis passing standard**

Gas type	Instrument analysis type	Passing standard	Exemption standard
Ammonia	Detector tube	Reduction rate: over 70%	Reduction rate: over 80%
Acetic acid	Detector tube	Reduction rate: over 70%	Reduction rate: over 70%
Isovaleric acid	GC	Reduction rate: over 85%	Reduction rate: over 95%
Nonanal	GC	Reduction rate: over 75%	Reduction rate: over 90%

Contact regarding deodorant test

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Methyl mercaptan	Detector tube	Reduction rate: over 70%	—
Hydrogen sulfide	GC	Reduction rate: over 70%	—
Indole	Detector tube	Reduction rate: over 70%	—
Acetaldehyde	Detector tube	Reduction rate: over 70%	—
Pyridine	Detector tube	Reduction rate: over 70%	—

② Sensory test passing standard

If 5 out of 6 panelists judge as “weak judgement” for both fabric odor and atmospheric odor, the result is “pass”.

If the conditions of the exemption standard are met for Ammonia, Acetic acid, Isovaleric acid and Nonanal listed in ①instrument analysis passing standard, conducting sensory test will be exempt.

【Photocatalytic deodorant test】

JTETC sets the test method and judgement standards and carries out certification for photocatalytic deodorant finished mark, and Nissenken handles those tests. The photocatalytic is subject to work under ultraviolet light, and the reduction rate of bright conditions (with UV irradiation) and dark conditions (without UV irradiation) are compared with the gas concentration.

【Overview】

Test method (Detector tube method) :
Put the specimen inside a 5L tedlar bag or plastic bag and insert 3L gas adjusted to the specified concentration (Gas components: ammonia or acetaldehyde) and carry out exposure test for 24 hours. At this time, if the reduction rate exceeds 70% for either the bright or dark condition, but the photocatalytic effect falls below 20, a 2nd exposure test will be conducted with the tested samples.
Certification standard :
For the first exposure test, the reduction rate under light condition or dark condition shall be ≧70.0% And "Photocatalytic effect" shall be ≧20.0%. Or for the first exposure, the reduction rate under light condition or dark condition shall be ≧ 70.0% and for the second exposure, the "Photocatalytic effect" shall be ≧20.0%.
Calculation method :
A: reduction rate under light condition (%) = (【Concentration of the residual gas for the blank test under light condition】 − 【Concentration of the residual gas for the specimen under light condition】) / 【Concentration of the residual gas for the blank test under light condition】 × 100
B: reduction rate under dark condition (%) = (【Concentration of the residual gas for the blank test under dark condition】 − 【Concentration of the residual gas for the specimen under dark condition】) / 【Concentration of the residual gas for the blank test under light condition】 × 100
Photocatalytic effect= A (%) − B (%)

【JTETC SEK mark】

SEK 消臭加工　SEK 消臭加工 Deodorant effect	SEK 光触媒消臭加工　SEK 防汚加工 Photocatalytic deodorant effect

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