

# fresh<sup>2</sup> testing overview



fresh<sup>2</sup> is a trademarked product of Technical Consumer Products, Inc.

## HOW IT WORKS:

The titanium dioxide coating on **fresh<sup>2</sup>** creates a photocatalytic reaction when exposed to the fluorescent light produced by the bulb. This reaction releases electrons, or negatively charged particles. At the same time, a positively charged hole is formed in its place. This combination of negative and positive creates a very strong oxidizer called the hydroxide radical. Odors that come into contact with the positively charged holes are broken down by these oxidizers into odorless compounds.

## TESTING:

The testing was conducted by the Ministry of Welfare and Labor in Japan. The purpose of this testing was to quantitatively measure the gas decomposability of the **fresh<sup>2</sup>** lamp.

## METHOD:

In three 5-liter tetra-packs in which the sample was inserted, one type of gas at a time was injected so that the initial concentration was 30ppm (parts per million), the residual gas concentration was measured over time by a Kitagawa detection tube.

Two gases were measured: ammonia and trimethylamine. Ammonia is a pungent colorless, gaseous alkaline compound of nitrogen and hydrogen that is very soluble in water and can easily be condensed to a liquid by cold and pressure. Trimethylamine is a colorless, toxic, flammable, alkaline gas with a fishy odor in lower concentrations and an ammoniacal odor in higher concentrations.

## RESULTS:

Elapsed Time	Item	Ammonia	Trimethylamine
At Start	Residual conc. (ppm)	30.0	30.0
After 10 minutes	Residual conc. (ppm)	3.5	4.4
	absorption ratio (%)	88.3	85.3
After 30 minutes	Residual conc. (ppm)	2.5	2.7
	absorption ratio (%)	91.7	91.0
After 1 hour	Residual conc. (ppm)	1.9	2.6
	absorption ratio (%)	93.7	91.3
After 2 hours	Residual conc. (ppm)	1.9	2.0
	absorption ratio (%)	93.7	93.3
After 5 hours	Residual conc. (ppm)	1.9	2
	absorption ratio (%)	93.7	93.3

**In summary,** the test conclusively proved that the **fresh<sup>2</sup>** compact fluorescent lamp effectively breaks down odors in the air. The lamp begins to clean the air after 10 minutes of use. The longer the lamp is left on the greater the absorption rate. The test shows that after five hours the **fresh<sup>2</sup>** lamp absorbed more than 93% of the odors in the air.

fresh<sup>2</sup>

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