

# Cigarette Odor Eliminating Effects of Zeomic (powder form)

The cigarette odor eliminating effects of Zeomic were analyzed.

## Test Method

Smoke from burning cigarettes was collected into a container (10L) to allow the substances in the smoke to adhere to the inner wall of the container. Then, the air was replaced once and Zeomic (2g of powder) was placed into the container. Panelists were asked to check the odor and make sensory evaluations immediately after putting Zeomic into the container, and to check again 3 hours later, and 24 hours later.

## Evaluation Results

Each of the volatile organic compounds in the gas were separated and extracted and then analyzed using the GC/MS method. The chart and the simplified quantitative results for the primary ingredients are shown below. The sensory test results for odor intensity are also indicated inside the chart.

Gas	Gas concentration (ppm)			
	Immediately afterwards	3 hours later	24 hours later	
Acetaldehyde	0.09	0.09	0.04	
2-methyl propanal	0.01	0.01	0.01	
2-methyl propenal	0.01	0.01	0.02	
Acetic acid	0.91	0.01	0.01	
2-methyl butanal	0.01	0.01	0.01	
Pyrazine	0.03	0.01	0.01	
1-methyl pyrrolo	0.05	0.03	0.03	
Dimethylamino acetonitrile	0.14	0.01 ↓	0.01 ↓	
Propylene glycol	0.93	0.01 ↓	0.01 ↓	
Hexamine	0.38	0.01 ↓	0.01 ↓	
Nicotine	5.30	0.01 ↓	0.01 ↓	
Nicotyrine	0.14	0.01 ↓	0.01 ↓	
Other gases	0.70	0.33	0.37	
TOTAL VOC	8.70	0.50	0.50	
Sensory analysis	Odor intensity (Threshold odor number)	Strong stimulation Odor of cigarettes (4.0 – 4.5)	Low stimulation Odor of cigarettes (3.5)	Almost no stimulation Odor of cigarette ashes (3.0)

Note) For systems in which Zeomic was not incorporated, there was no change in the gas concentration level.

Threshold odor number	Details
0	No odor
1	Barely perceptible odor (detectable threshold concentration)
2	Identifiable slight odor (identifiable threshold concentration)
3	Easily detectable odor
4	A strong odor
5	An overwhelming odor

## Test Results

From the test results we can see that 3 hours later and 24 hours later, the acetic acid that is a stimulant, and pyridine and nicotine, that are the distinctive tobacco odors, were almost gone, confirming a perceivable change in odor quality. The results showed a 94% decrease in the volatile substances contained in the tobacco smoke. Thus, Zeomic can be a promising deodorizing agent tobacco odor.