

Formaldehyde Analyzer

YL Formaldehyde Analyzer offers a perfect solution for accurate, efficient, and ease of operation process for the quantitative measurement of airborne aldehyde compounds by providing sampling procedures and detailed sample preparation protocols.

Volatile organic compounds are known to cause sick building syndrome, which can lead to respiratory illnesses. Formaldehyde is one of the major irritants of the respiratory tract, which necessitates the monitoring of work space environments for its presence.

YL Formaldehyde Analyzer represents the best solution for the analysis of formaldehyde derivatives by providing the most appropriate system configuration to monitor indoor air quality.

Refer to the emission rate regulation for Aldehyde compounds located on the last page of this presentation for current limits of formaldehyde levels established for indoor air quality.

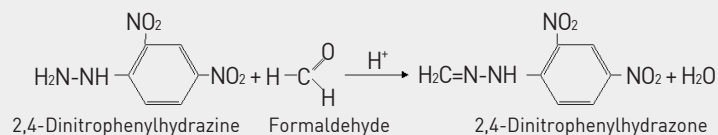
The procedures for the measurement of Formaldehyde levels in indoor air are categorized to sample collection, sample preparation and analysis.

• Useful Information

1) Sample collection

Collect an indoor air sample using the silica gel cartridge coated by 2,4-dinitrophenylhydrazine (DNPH). For sampling, the system consists of an Ozone Scrubber, a LpDNPH Cartridge, a flow meter with a pump and a Teflon tube. Generally, if the ambient indoor air temperature is higher than 20 °C, the volume of the collected sample will approximate 15-30 L at a 200-1000 ml/min flow rate of the sampling pump. Once a sample of the targeted indoor air has been collected, any formaldehyde present immediately reacts with the DNPH to form the derivative 2,4-Dinitrophenylhydrazone.

The derivative 2,4-Dinitrophenylhydrazone is detected by UV/VIS absorbance at the 360 nm wavelength. Quantify the Formaldehyde level in the indoor air sample by chromatogram's peak's height or area.



[Fig.1.] Reaction of Formaldehyde with 2,4-Dinitrophenylhydrazine to form the derivative 2,4-dinitrophenylhydrazone

2) Sample Preparation

Collected indoor air sample by the silica gel cartridge should be immediately wrapped with aluminum foil to block the light. Store the sample in a cold and dark place of less than 4 °C. The sample should be analyzed as soon as possible. Prior to injecting the sample in the Formaldehyde Analyzer, add 5 ml of Acetonitrile into the cartridge for extract.

3) Sample Analysis

Before injecting the collected indoor air sample into the Formaldehyde Analyzer, the system must be stabilized. Prepare an eluant, and run the Formaldehyde Analyzer at a flow rate of 1.0 ml/min for 20-30 min to stabilize the system. To verify system stabilization, check whether the signal emitting from the Formaldehyde Analyzer data system reaches equilibrium. Inject the collected indoor air sample into the injector valve of Formaldehyde Analyzer with a Micro-syringe for Formaldehyde Analyzer or Autosampler.

When all DNPH-Formaldehyde derivatives or Carbonyl compounds are extracted and completed the analysis, prepare additional samples for analysis following the above procedures. However if the detection limits of the Formaldehyde Analyzer are exceeded, dilute the sample or decrease the amount of sample.

In addition, if the retention time of the targeted constituent is different from the initial analytical condition (within ±5 % in the detection time of targeted constituents), control the retention time by adjusting the mixing ratio of Acetonitrile and water.

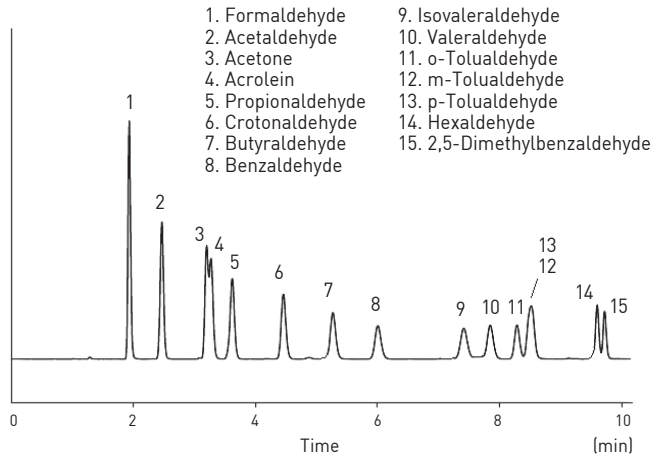
• Application

- Formaldehyde or Aldehydes in indoor air
- Aldehydes included in the odor
- Formaldehyde or Aldehydes included in building materials
- Other Aldehydes

Aldehydes (Carbonyl-DNPH)

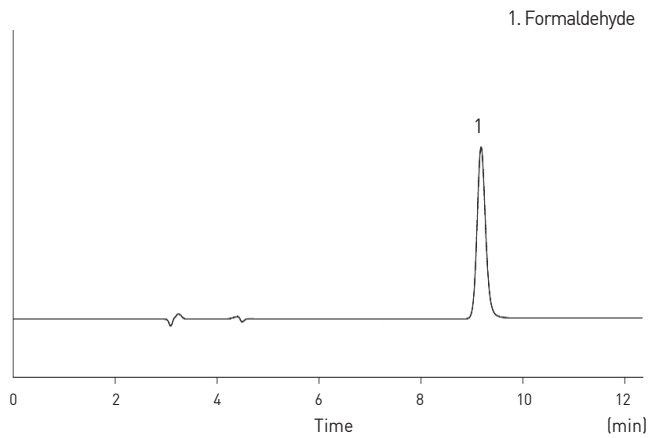
- Column : C18 (4.6 mm, 250 mm, 5 μm)
- Mobile phase : ACN : Water Gradient
- Detector : UV/Vis 360 nm
- Flow : 1.2 ml/min
- Injection volume : 20 μl
- Oven temp : 35 °C

Time (min)	ACN	Water
0	20	80
5	60	40
9	60	40
13	100	0



Formaldehyde (Acetylacetone Derivatization)

- Column : C18 (4.6 mm, 150 mm, 5 μm)
- Detector : UV/Vis 415 nm
- Flow rate : 1.0 ml/min
- Injection volume : 20 μl
- Oven temp : 35 °C
- Mobile phase : ACN : Water = 25 : 75
- Sample preparation : Acetylacetone Derivatization



Aldehydes in Bamboo Vinegar

- Mobile phase : ACN : Water = 60 : 40
- Flow rate : 1.0 ml/min
- Column oven : 35 °C
- Detector : UV/Vis 360 nm
- Column : C18 (4.6 mm, 250 mm, 5 μm)
- Injection volume : 20 μl
- Sample preparation : DNPH Derivatization

