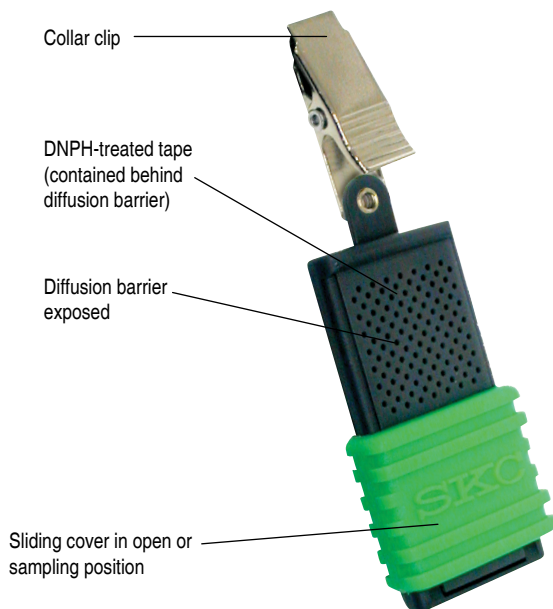


# UME<sup>x</sup>100 Passive Sampler

## Formaldehyde Sampling

The UME<sup>x</sup> 100 Passive Sampler for formaldehyde was developed for the accurate and convenient collection of formaldehyde to determine occupational exposure. Constructed of tough polypropylene, the single-use UME<sup>x</sup> 100 contains tape treated with 2,4-dinitrophenylhydrazine (DNPH) for reliable collection of formaldehyde. To sample, remove the sampler from the pouch, record sampling information, slide cover to “on” position, and clip to a worker’s collar or appropriate sampling location. When sampling is complete, slide cover to “off” position, place the sampler back in the original pouch immediately, and seal. Send the sampler to an accredited laboratory for analysis by high-performance liquid chromatography (HPLC) with UV detection.

For sampling rates on other aldehydes, see the UME<sup>x</sup> 100 Sampling Rates for Other Aldehydes table on reverse side.



UME<sup>x</sup> 100 Sampler with sliding cover in sampling position

- Accuracy meets OSHA requirements
- Uses 2,4-DNPH chemistry
- For formaldehyde collection
  - Sample integrity is assured
  - Validated by OSHA
- Documented formaldehyde uptake rates for 15-minute to 24-hour and 7-day samples
  - Sampling rates available for other aldehydes
- Permits detection of low ppb levels of formaldehyde
- Economical and easy to use
  - No pump or training required
  - Low-cost sampler
- Conforms to EU ISO 16000-4-2004
- Meets specifications of OSHA Method 1007<sup>‡</sup>
- Highly sensitive and specific analysis method
- Small and unobtrusive
- Simple-to-use “on/off” sliding cover
- Safe
  - No glass or chemical liquids in the sampler
- 28.6 ml/min uptake rate enhances sensitivity for 15-minute, 8-hour, and 24-hour sampling

<sup>‡</sup> Note: If sampling in an atmosphere containing formalin, visit [www.skinc.com/knowledgecenter](http://www.skinc.com/knowledgecenter) and search on “formalin” for field study information.

See more information and ordering on reverse side!

### Performance Profile

<b>Sampling Rate for Formaldehyde:</b>	<ul style="list-style-type: none"> <li>• 28.6 ml/min with an RSD of 7.6% at a wind velocity of 5 to 100 cm/sec for 15 min to 24 hrs</li> <li>• 20.4 ml/min at wind velocities &lt; 5 cm/sec for 1 to 7 days</li> </ul>
<b>Detection Principle:</b>	Formation of stable DNPH-hydrazone in the presence of formaldehyde
<b>Validation Range:</b>	0.06 to 3.0 ppm
<b>Lower Detection Limits:</b>	<ul style="list-style-type: none"> <li>• 15 min: 200 ppb (.24 mg/m<sup>3</sup>)</li> <li>• 8 hr: 5 ppb (.006 mg/m<sup>3</sup>)</li> <li>• 24 hr: 2 ppb (.002 mg/m<sup>3</sup>)</li> <li>• 7 days: 0.2 ppb (.0002 mg/m<sup>3</sup>)</li> </ul>
<b>Shelf-life:</b>	12 mos from date of manufacture at ≤ 39.2 F (4 C)
<b>Capacity:</b>	29 µg/sample
<b>Analysis:</b>	Solvent extraction and analysis by HPLC (high-performance liquid chromatography) with UV detection
<b>Accuracy:</b>	± 25%, exceeds OSHA requirements
<b>Storage:</b>	<i>Before use:</i> ≤ 39.2 F (4 C) <i>After use:</i> ≤ 39.2 F (4 C) and analyze within 3 weeks
<b>Temperature Effects:</b>	No effect on sampling rate between 10 and 30 C
<b>Humidity Effects:</b>	No effect from 10 to 80% relative humidity; do not use below 10% RH
<b>Wind Effects:</b>	No effect from 5 to 100 cm/sec
<b>Interferences:<sup>‡</sup></b>	<ul style="list-style-type: none"> <li>• Large amounts of carbonyl compounds may reduce the uptake of formaldehyde</li> <li>• Use in ozone levels &lt; 0.5 ppm</li> </ul>
<b>Dimensions:</b>	3.4 x 1.1 x .35 in (8.6 x 2.8 x .89 cm)
<b>Weight:</b>	0.38 oz (10.9 gm)

### Other Available UME<sup>®</sup> Passive Samplers

The same convenient and economical UME<sup>®</sup> design is also available for sampling sulfur dioxide/nitrogen dioxide (**UMEX<sup>®</sup>200**), ammonia (**UMEX<sup>®</sup>300**), and amines (**UMEX<sup>®</sup>400**). Contact SKC for more information or visit [www.skinc.com](http://www.skinc.com)

### UMEX<sup>®</sup> 100 Sampling Rates for Other Aldehydes

Compound	Sampling Rate (ml/min)
Formaldehyde <i>(full validation)</i>	<b>28.6</b> (velocity 5 to 100 cm/sec, 15 min to 24 hrs) <b>20.4</b> (velocity < 5 cm/sec, 1 to 7 days)
Acetaldehyde	22.8 <sup>∞</sup>
Benzaldehyde	13.5 <sup>∞</sup>
Butyraldehyde	15.8 <sup>∞</sup>
Crotonaldehyde	9.71 <sup>∞</sup>
Glutaraldehyde	14.0 <sup>∞</sup>
Hexanaldehyde (hexanal)	9.66 <sup>∞</sup>
Isovaleraldehyde	15.5 <sup>∞</sup>
Propionaldehyde (propanal)	14.0 <sup>∞</sup>
Chloroacetaldehyde	19.4 <sup>**</sup>
Decylaldehyde	10.4 <sup>**</sup>
Heptanaldehyde	12.8 <sup>**</sup>
Nonanaldehyde	11.6 <sup>**</sup>
o-Phthaldehyde	12.83 <sup>**</sup>
o-Tolualdehyde	12.7 <sup>**</sup>
Valeraldehyde	15.4 <sup>**</sup>

<sup>∞</sup> Partial validation; see *Passive Sampling Guide* at [www.skinc.com/samplingguides](http://www.skinc.com/samplingguides).

<sup>\*\*</sup> Calculated sampling rate; see online *Passive Sampling Guide* at [www.skinc.com/samplingguides](http://www.skinc.com/samplingguides)

### References

Levin, J.O. and Lindahl, R., "Diffusive Air Sampling of Reactive Compounds - A Review," *Analyst*, Vol. 119, January 1994, pp. 79-83

Levin, J.O., Lindahl, R., and Anderson, K., "High-performance Liquid Chromatographic Determination of Formaldehyde in Air in the ppb and ppm Range Using Diffusive Sampling and Hydrazone Formation," *Nat. Inst. of Occ. Health, Research Dept. in Umea, Analytical Chem. Div., P.B. 6104, S-90006 Umea, Sweden* *Envtl. Tech. Letter* 9, 1988, pp. 1423-1430

OSHA Method 1007 Formaldehyde (Diffusive Samplers), May 2005

Levin, J.O., Lindahl, R., and Anderson, K., "A Passive Sampler for Formaldehyde in Air Using 2,4-Dinitrophenylhydrazine-coated Glass Fiber Filters," *Envtl. Sci. and Tech.*, Vol. 20, No. 12, 1986, pp. 1273-1276

### Ordering Information

Description	Cat. No.
<b>UMEX<sup>®</sup>100 Passive Sampler for Formaldehyde<sup>‡</sup> and Other Aldehydes,<sup>†‡</sup></b> individually packaged in	
aluminized pouch pk/10	<b>500-100</b>
pk 25	<b>500-100A</b>
<b>Treated Tape</b> , for QC purposes only, pk/50	<b>P20084</b>
<b>Stand for Area Sampling</b>	<b>690-302</b>

<sup>†</sup> Limited shelf-life; storage at ≤ 39.2 F (4 C) required.

<sup>‡</sup> **Note:** If sampling in an atmosphere containing formalin, visit [www.skinc.com/knowledgecenter](http://www.skinc.com/knowledgecenter) and search on "formalin" for field study information.

# Designed for single use only. Do not reuse UME<sup>®</sup> samplers.