SKC UMEx 100 Passive Sampler

Single-use diffusive sampler for formaldehyde and other aldehydes, with 2,4-DNPH chemistry

The UMEx 100 holds tape treated with 2,4-dinitrophenylhydrazine (DNPH) behind a diffusion barrier, in a polypropylene body with a sliding on/off cover. It needs no pump. It detects formaldehyde down to low ppb levels. A laboratory analyses it by HPLC with UV detection.



28.6 mL/min	0.06–3.0 ppm	2 ppb	±25 %
Sampling rate, formaldehyde	Validation range	Detection limit, 24 h	Accuracy

Performance

Sampling rate, formaldehyde	28.6 mL/min, relative standard deviation (RSD) 7.6 %, at 5–100 cm/s wind velocity, 15 min–24 h 20.4 mL/min at wind velocities below 5 cm/s, 1–7 days
Detection principle [1]	Formaldehyde forms a stable DNPH-hydrazone
Validation range	0.06–3.0 ppm
Lower detection limits	15 min: 200 ppb (0.24 mg/m³); 8 h: 5 ppb (0.006 mg/m³) 24 h: 2 ppb (0.002 mg/m³); 7 days: 0.2 ppb (0.0002 mg/m³)
Capacity	29 µg per sample
Accuracy	±25 %, exceeds OSHA requirements
Analysis	Solvent extraction and high-performance liquid chromatography (HPLC) with UV detection
Interferences	Large amounts of carbonyl compounds may reduce the uptake of formaldehyde Use at ozone levels below 0.5 ppm
Applications	Industrial hygiene: OSHA permissible exposure limit (PEL), 0.75 ppm time-weighted average (TWA), 2 ppm short-term exposure limit (STEL) Indoor air: 2 ppb (24 h), 0.2 ppb (7 days)

Operating conditions

Temperature	No effect on the sampling rate between 10 and 30 °C
Humidity	No effect from 10 to 80 % relative humidity; do not use below 10 % RH
Wind velocity	No effect from 5 to 100 cm/s
Storage	Before use: below 39.2 °F (4 °C) After use: below 39.2 °F (4 °C); analyse within 3 weeks
Shelf life	Limited; check the expiry date on the package

Mechanical

Body	Polypropylene; no glass and no liquid chemicals in the sampler
Sampling medium	DNPH-treated tape behind the diffusion barrier
Cover	Sliding cover with on (sampling) and off positions
Mounting	Collar clip for the breathing zone; stand for area sampling
Size and weight	3.4 × 1.1 × 0.35 in (8.6 × 2.8 × 0.89 cm), 0.38 oz (10.9 g)
Use	Single use only; do not reuse

Compliance

Standards	Meets the specifications of OSHA Method 1007; conforms to ISO 16000-4-2011

Sampling

Start	Take the sampler out of its pouch, record the sampling data and slide the cover to on
Place	Clip it to the worker's collar in the breathing zone, or set it on the stand for area sampling
Stop	Slide the cover to off, put the sampler back in its pouch at once and seal the pouch
Send	Send it to an accredited laboratory for analysis

Sampling rates for other aldehydes

Compound	Sampling rate, mL/min	Basis
Acetaldehyde	22.8	Partial validation
Benzaldehyde	13.5	Partial validation
Butyraldehyde	15.8	Partial validation
Crotonaldehyde	9.71	Partial validation
Glutaraldehyde	14.0	Partial validation
Hexanaldehyde (hexanal)	9.66	Partial validation
Isovaleraldehyde	15.5	Partial validation
Propionaldehyde (propanal)	14.0	Partial validation
Chloroacetaldehyde	19.4	Calculated
Decylaldehyde	10.4	Calculated
Heptanaldehyde	12.8	Calculated
Nonanaldehyde	11.6	Calculated
o-Phthalaldehyde	12.83	Calculated
o-Tolualdehyde	12.7	Calculated
Valeraldehyde	15.4	Calculated

Samplers

Order code	Description
500-100	UMEx 100 for formaldehyde and other aldehydes, 10 per pack
500-100A	UMEx 100 for formaldehyde and other aldehydes, 25 per pack

Order from Analyt-MTC with the order codes. The samplers have a limited shelf life and must be stored below 39.2 °F (4 °C).

Accessories

Treated tape, for quality control only, 50 per pack	P20084
Stand for area sampling	690-302

Notes

1. For sampling in an atmosphere that contains formalin, ask Analyt-MTC for the field study information.

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