

**SKC®**

Technical Note

SKC 575-002 Passive Sampler Acrylonitrile Method Summary (1 ppm In-house limit) Validation To NIOSH Protocol*

PROCEDURE: Adsorption on the Passive Sampler Cat. No. 575-002 containing 500 mg Anasorb® 747, with desorption (in situ) with 2 ml carbon disulfide and analysis by gas chromatography with flame ionization detection.

SAMPLING RATE: 20.4 ml/min tested for linearity over the range of four to eight hours.

BIAS AND PRECISION: The pooled % RSD** for all samplers was 5.4%. Since the uptake of the sampler has been calibrated against standard atmospheres, the method can be considered free from bias.

Meets NIOSH accuracy criteria of $\leq 25\%$

ANALYTICAL RECOVERY:	% Recovery	Validation Range	
	Varies with humidity	(μg)	(ppm)
	(see below)	10 to 40	0.5 to 2 for 8 hours

STORAGE: Samples, which were collected for four hours at the 2x the in house limit at 80% RH (25 C), can be stored for up to 21 days in the freezer (-8 C) with minimum loss in recovery (< 10%). Storage at room temperature was not acceptable.

HUMIDITY EFFECTS: High humidity conditions (80% RH at 25 C) did not affect the uptake rate as long as the correct desorption efficiency was used. A desorption efficiency correction of 81% is applied for low humidity conditions (up to eight hours at RH < 50% at 25 C) or for short period sampling at high humidities (four hours or less at 80% RH, 25 C). A desorption efficiency correction of 58% is applied when sampling at high humidity conditions (more than four hours at 80% RH, 25 C, or any time period at 80% RH, 40 C).

REVERSE DIFFUSION: Not significant (< 10%) when samplers were exposed to 2 ppm Acrylonitrile for four hours then four hours of clean air at 80% RH (25 C).

LIMIT OF DETECTION: Depending on the instrumentation, it is possible to determine at least 9.7 μg /sampler with an RSD of < 10%. This corresponds to an air concentration of 0.46 ppm (v/v) based on an eight-hour sample at the validated sampling rate of 20.4 ml/min.

VALIDATION DATE:

March 1998

* Sampler passed all criteria of Full Validation to NIOSH Protocol at PEL of 2 ppm.

** Relative Standard Deviation

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