



# Technical Note

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

<b>PROCEDURE:</b>	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.									
<b>SAMPLING RATE:</b>	20.4 ml/min tested for linearity over the range of 15 minutes to eight hours.									
<b>BIAS AND PRECISION:</b>	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 $\leq 25\%$									
<b>ANALYTICAL RECOVERY:</b>	<table><thead><tr><th>% Recovery</th><th colspan="2">Validation Range</th></tr></thead><tbody><tr><td>Varies with humidity (see below)</td><td>(<math>\mu\text{g}</math>)</td><td>(ppm)</td></tr><tr><td></td><td>10 to 40</td><td>0.5 to 2 for 8 hours</td></tr></tbody></table>	% Recovery	Validation Range		Varies with humidity (see below)	( $\mu\text{g}$ )	(ppm)		10 to 40	0.5 to 2 for 8 hours
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<b>STORAGE:</b>	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.									
<b>HUMIDITY EFFECTS:</b>	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).									
<b>REVERSE DIFFUSION:</b>	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).									
<b>LIMIT OF DETECTION:</b>	Depending on the instrumentation, it is possible to determine at least 9.7 $\mu\text{g}$ /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.									
<b>VALIDATION DATE:</b>	March 1998									

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

\*\* Relative Standard Deviation

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