

10-3 (2004)	Acrolein
CAS N°: 107-02-8	EINECS N°: 203-453-4
EC-LV (8 h): - Lowest European LV (8h): 0,12 mg/m ³ Highest European LV (8h): 0,25 mg/m ³	EC-STLV: - Lowest European STLV: 0,24 mg/m ³ Highest European STLV: 0,70 mg/m ³

SUMMARY OF THE METHOD

Language: English	Reference: Acrolein and/or formaldehyde: OSHA ID-052, Sampling and Analytical Methods, Salt Lake City (1985, updated June 1989).
-----------------------------	---

Summary: Active sampling on XAD-2 adsorbent coated with 2-(hydroxymethyl)piperidine. Sample desorbing is performed with toluene, analysis by GC / NPD.

SAMPLING

Sampler type	Sorbent tube
Sampling substrate	XAD-2 coated with 2-(hydroxymethyl)piperidine. (150/75 mg)
Recommended flow rate	0,1 l/min
Recommended sampling time	8 h
Recommended volume	48 l

TRANSPORT AND STORAGE

Description/conditions of transport and storage incl. specific issues	After sampling the tube is sealed with plastic end caps. At least one blank value is included for each sampling set. The blank value should be handled in the same manner as the samples with the exception that air is not drawn through it. Samples are stable following storage at ambient temperature for at least 19 days.
--	---

ANALYSIS

Sample preparation	Sampling and control section of the sampling tube are transferred into separate 2 ml vials. The glass wool plugs are discarded if they do not contain a significant number of adsorbent beads. 1 ml of desorbing solution (Toluene with 0,02% DMF as internal standard) is added to each vial. The vials are sealed with Teflon-lined caps and then allowed to desorb for 1 h. The vials are shaken by hand with vigorous force several times during desorption time.
Analytical technique	Analysis by GC / NPD.

METHOD EVALUATION DATA

Range studied	0,083 – 0,42 mg/m ³
Sampling bias	-
Analytical bias	-
Method bias	- 7,7 %
Sampling precision	-
Analytical precision	-
Method precision	5,1 %

METHOD EVALUATION DATA (continued)	
Limit of quantification	0,0061 mg/m ³
Overall uncertainty (EN 482)	17,8%
Expanded uncertainty (prEN 482)	21,2 - 22,0 %
INFORMATION IN RELATION TO THE VALIDATION	
Is the sample dissolution procedure described widely applicable?	yes
Does the sample dissolution method include wall deposits, where applicable?	not applicable
Was a test gas atmosphere used, where applicable?	Yes, for storage and BV measurements, but not for the determination of the desorption efficiency.
How was the recovery determined?	From spiked samples an analytical recovery (desorption efficiency) of 102,4 % was found. From test gas atmospheres studies a method recovery 92,3 % was found for a concentration of 0,35 mg/m ³ .
Was the sampler capacity or breakthrough volume determined?	Yes, BV was determined to be 83 l sampling at a flow rate of 0,2 l/min, RH 30 % and 85 %.
Was temperature and RH considered, where appropriate?	Yes, The method was evaluated by sampling generated atmospheres of acrolein at 49 % RH. The effect of temperature was not studied.
EVALUATION	
Rating category	A 2
Rationale for rating	Up to date methodology, detailed method description, performance and validation test data included in the method, OU and expanded uncertainty requirements are met, range studied does not cover 0,1×LLV to 2×HLV. The overall uncertainty data above have been calculated from OSHA overall recovery and precision data using the formula in EN 482. The expanded uncertainty data have been calculated using the method described in the EU mandated report <i>Analytical methods for chemical agents</i> . Test atmosphere was not used for all tests and recovery was not determined at high and low RH.
Observations	-
Similar methods	None.