



## Sorbent Traps

### HCl, HBr, and HF

Hydrogen chloride (HCl), hydrogen bromide (HBr), and hydrogen fluoride (HF) sorbent traps are used for measuring hydrogen halides in any sampling environment for engineering studies and control technology optimization, as well as stack measurement check-ups between quarterly testing.

HCl sorbent traps promise to provide a quick, easy, and effective alternative to FTIR and Method 26/26A. With reasonable sample volumes, it's possible to quantify flue gas HCl concentrations lower than 0.1 PPMV.

By using ion chromatography, each trap section is dissolved into just 10 mL of solution, thanks to a specially developed chloride extraction procedure. Low dilution means high chloride concentration, which in turn means lower sample volume requirements. We use a well-tested vapor phase spiking procedure, sampling spiked/unspiked pairs, to ensure method accuracy.

#### Applications

- ▶ Spot check HCl levels for your CEM or in between quarterly testing
- ▶ Verify standardized HCl cylinder concentration before and after transfer lines
- ▶ Measure HBr concentration to predict Hg oxidation or corrosion rates

#### Features and Benefits

- ▶ Demonstrate good agreement with existing methods including M26/26A and M321
- ▶ Low chloride background on the sorbent makes it easy to measure low levels
- ▶ Aerosol pre-filter is available to prevent interference by chloride salts





## Supporting Data

The HCl traps can also measure HBr and HF. Below are the results of a study where the traps were sampled before and after an APH to predict corrosion potential:

Run #	Sampling Location	Trap ID	S <sub>1</sub> (µg)	S <sub>2</sub> (µg)	Pair Average @3% O <sub>2</sub>	Relative Deviation	Concentration Difference Pre-APH to Post-APH
1	Post-APH	OL288816	71.3	0	3.89	8.8%	21.6%
		OL288932	85.1	0			
	Pre-APH	OL288783	130.6	0	4.83	0.1%	
		OL288828	130.8	0			
2	Post-APH	OL288790	72.0	0	3.30	8.6%	35.8%
		OL289936	60.7	0			
	Pre-APH	OL288803	124.0	0	4.74	1.3%	
		OL288920	127.2	0			
3	Post-APH	OL288784	64.0	0	3.41	5.9%	29.9%
		OL288826	72.0	0			
	Pre-APH	OL288929	125.8	0	4.62	0.0%	
		OL288818	125.8	0			
4	Post-APH	OL288827	60.1	0	3.24	5.9%	43.9%
		OL288924	67.6	0			
	Pre-APH	OL288785	136.3	0	5.06	1.8%	
		OL288819	141.4	0			

The sorbent trap spiking procedure yields reliable results. Below are the results for field recovery of 1000 µg spikes:

Cl Section 1 Mass (µg)	Cl Section 2 Mass (µg)	HCl Concentration (PPMV)	Relative Deviation
1832	0	30.9	3.80%
771	0	28.6	
1785	0	29.1	1.70%
759	0	28.2	
1803	0	29.8	2.40%
766	0	28.4	
1772	0	28.7	1.20%
754	0	28	
1720	0	26.7	2.60%
759	0	28.2	
1783	0	29.1	0.10%
784	0	29.1	
1742	0	27.5	0.80%
754	0	28	
1741	0	27.5	0.70%
751	0	27.9	
1757	0	28.1	0.50%
764	0	28.4	