



## SampleRAE Correction Factors

### Tube Calibration and Correction Factors

RAE Systems gas detection tubes are calibrated using the LP-1200 hand pump. Because of the difference in flow pattern between the standard hand pump and the SampleRAE, the stain lengths on the tubes may differ slightly and some corrections may be desired for highly accurate results. In most cases the corrections are small and can be neglected. Table 1 is a summary of these corrections for RAE tubes. The Correction Factors (CFs) should be multiplied by the observed readings to obtain the true gas concentrations. In most cases, the SampleRAE slightly overestimates the concentration, and CFs <1 are applied.

### SampleRAE Flow Patterns

The SampleRAE (ASP-2000) provides an alternate, convenient way of pulling sample gas through the tubes. The SampleRAE is particularly convenient when large sample volumes (multiple hand pump strokes) are required for the tubes. The SampleRAE has a highly accurate internal gas flow meter and draws a precise volume of sample through the tube. The flow is steady and approximates the average flow rate observed with the hand pump. The hand pump provides a non-uniform flow that rises sharply when the piston is pulled, followed by an exponential decrease in the flow. This difference in flow pattern is what causes the slight shift in the color stain in some cases.

**Table 1. SampleRAE Correction Factors**

Tube Number	Compound	Range	CF
10-100-05	NH3	1-30 ppm	0.81
10-100-10	NH3	5-100 ppm	0.93
10-100-15	NH3	25-500	0.97
10-100-40	NH3	1-15%	0.89
10-101-05	Benzene	0.5-40 ppm	0.89
10-101-20	Benzene	5-100 ppm	0.89
10-102-18	CO	5-100 ppm	0.61
10-102-20	CO	5-100 ppm	0.87
10-102-30	CO	20-500 ppm	0.90
10-102-45	CO	0.2-4%	0.93
10-103-04	H2S	0.2-3 ppm	0.78
10-103-05	H2S	0.2-3 ppm	0.77

Tube Number	Compound	Range	CF
10-103-10	H2S	2.5-60 ppm	0.94
10-103-15	H2S	10-120	0.96
10-103-18	H2S	25-500	0.91
10-103-20	H2S	50-800	0.95
10-103-30	H2S	100-2000	0.95
10-103-40	H2S	0.1-2%	0.95
10-103-50	H2S	2-40%	0.82
10-104-30	CO2	300-5000 ppm	0.93
10-104-40	CO2	0.05-1%	0.90
10-104-45	CO2	0.25-3%	0.93
10-104-50	CO2	1-20%	0.88
10-105-10	HF	0.5-20 ppm	2.3
10-106-10	Cl2	0.5-8 ppm	0.78
10-106-20	Cl2	5-100 ppm	0.85
10-107-15	SO2	2-30 ppm	0.86
10-107-20	SO2	5-100	0.91
10-107-25	SO2	100-1800 ppm	0.88
10-107-30	SO2	200-4000	0.90
10-107-40	SO2	0.2-5%	0.86
10-108-10	HCl	1-20 ppm	1.5
10-108-10	HCl	20-500 ppm	2.0
10-109-20	NOx	1-50 ppm	0.90
10-110-30	HC	50-1000 ppm	1.02
10-111-40	Acetone	0.1-2%	0.99
10-112-20	Xylene	10-200 ppm	1.16
10-113-20	MEK	0.02-0.6%	0.92
10-114-20	Toluene	10-300 ppm	0.77
10-116-10	PH3	5-50 ppm	0.95
10-116-20	PH3	25-500 ppm	0.86
10-116-25	PH3	50-1000 ppm	0.83
10-117-10	NO2	0.5-30 ppm	0.74
10-120-10	H2O	2-10 lbs/MMCF	0.81
10-120-20	H2O	6-40 lbs/MMCF	0.83
10-129-20	Mercaptans	5-120 ppm	1.25