

Detectable Gases

Family	Gas	Range	TLV ¹	LAL	Default Alarm		Response Time (T50) at 2 TLV Gas Conc. (sec)	Max. Sample Tubing Length (m)	Sample Line Particulates Filter ²	ChemCassette ¹⁰				Optimum Temp Range (°C)	Optimum %RH Range for Best Accuracy ^{7,8}		
					A1	A2				Name	P/N (14d)	P/N (30d)	P/N (90d)			Allowable Days After First Use ¹¹	
Hydrides	Arsine (AsH ₃)	0.5-500ppb	5 ppb		1 ppb	2.5 ppb	5 ppb	55	30	A	Flex CC XP Hydrides	1265-4000	n/a	1265-3000	90	0-40	10-70% RH ^{4,6}
	Phosphine (PH ₃)	3-3000 ppb	300 ppb		5 ppb	150 ppb	300 ppb	6									30-70% RH ^{4,6}
	Diborane (B ₂ H ₆)	5-1000 ppb	100 ppb		10 ppb	50 ppb	100 ppb	14									30-70% RH ^{4,6}
	Silane (SiH ₄)	0.03 - 50 ppm	5 ppm		0.05 ppm	2.5 ppm	5 ppb	13									34-50% RH ^{4,6}
	Germane (GeH ₄)	50-2000 ppb	200 ppb		100 ppb	100 ppb	200 ppb	245									40-50% RH ^{4,6}
	Hydrogen Selenide (H ₂ Se)	2-500 ppb	50 ppb		5 ppb	25 ppb	50 ppb	14									10-60% RH ^{4,6}
	Hydrogen Sulphide (H ₂ S)	0.001-9.999 ppm	1 ppm		0.005 ppm	0.5 ppm	1 ppm	7									10-75% RH ^{4,6}
Mineral Acids	Hydrogen Fluoride (HF)	0.02-20 ppm	0.5 ppm	2 ppm STEL-C	0.03 ppm	1 ppm	2 ppm	7	5	B, C	Flex CC XP Mineral Acids	1265-4001	n/a	1265-3001	90	0-35	15-75% RH ^{5,6}
	Hydrogen Chloride (HCl)	0.02-20 ppm	2 ppm	STEL-C	0.03 ppm	1 ppm	2 ppm	5									30-50% RH ^{5,6}
	Hydrogen Bromide (HBr)	0.02-10 ppm	2 ppm	STEL-C	0.03 ppm	1 ppm	2 ppm	5									20-50% RH ^{5,6,9}
	Boron Trifluoride (BF ₃)	0.05-10 ppm	1 ppm	2015 NIC (0.1ppm TWA; 0.7ppm STEL/C)	0.1 ppm	0.5 ppm	1.0 ppm	5									15-60% RH ^{5,6}
	Nitric Acid (HNO ₃)	0.02-20 ppm	2 ppm	4 ppm STEL	0.05 ppm	1 ppm	2 ppm	15									40-50% RH ^{4,6}
	Sulfuric Acid (H ₂ SO ₄)	5-750 ppb	50 ppb	0.2mg/m ³	10 ppb	25 ppb	50 ppb	2000	0.1	No filter							40-50% RH ^{4,6}
Mineral Acids (export unrestricted)	Hydrogen Fluoride (HF)	0.4-20 ppm	0.5 ppm	2 ppm STEL-C	0.4 ppm	1 ppm	2 ppm	7	5	B, C	Flex CC-U XP Mineral Acids	1265-4012	n/a	1265-3012	90	0-35	15-75% RH ^{5,6}
	Hydrogen Chloride (HCl)	0.02-20 ppm	2 ppm	STEL-C	0.03 ppm	1 ppm	2 ppm	5									30-50% RH ^{5,6}
	Hydrogen Bromide (HBr)	0.02-10 ppm	2 ppm	STEL-C	0.03 ppm	1 ppm	2 ppm	5									20-50% RH ^{5,6,9}
	Boron Trifluoride (BF ₃)	0.05-10 ppm	1 ppm	2015 NIC (0.1ppm TWA; 0.7ppm STEL/C)	0.1 ppm	0.5 ppm	1.0 ppm	5									15-60% RH ^{5,6}
	Nitric Acid (HNO ₃)	0.02-20 ppm	2 ppm	4 ppm STEL	0.05 ppm	1 ppm	2 ppm	15									40-50% RH ^{4,6}
	Sulfuric Acid (H ₂ SO ₄)	5-750 ppb	50 ppb	0.2mg/m ³	10 ppb	25 ppb	50 ppb	2000	0.1	No filter							40-50% RH ^{4,6}
Oxidizers	Chlorine (Cl ₂)	0.005-5 ppm	0.5 ppm		0.02 ppm	0.25 ppm	0.5 ppm	7	30	B, C	Flex CC XP Chlorine	1265-4002	n/a	1265-3002	90	0-40	30-55% RH ^{4,6}
	Chlorine (Cl ₂)	0.01-5 ppm	0.5 ppm		0.05 ppm	0.25 ppm	0.5 ppm	9	30	B, C	Flex CC Fluorine/Oxidizers	1265-4004	1265-3004	n/a	30	0-40	5-75% RH
	Fluorine (F ₂)	0.01-10 ppm	1 ppm	0.1 ppm OSHA PEL	0.05 ppm	0.5 ppm	1.0 ppm	5	10								0-85% RH
	Nitrogen Dioxide (NO ₂)	0.03-10 ppm	0.2 ppm		0.05 ppm	0.1 ppm	0.2 ppm	56	30								10-70% RH ^{5,6}
	Chlorine Dioxide (ClO ₂)	20-1000 ppb	100 ppb		25 ppb	50 ppb	100 ppb	36	10								5-90% RH
Amines	Ammonia (NH ₃)	0.01-150 ppm	25 ppm		0.05 ppm	12.5 ppm	25 ppm	5	30	B, C	Flex CC XP Ammonia	1265-4003	n/a	1265-3003	90	0-35	0-90% RH ⁴
	Dimethylamine (DMA, H ₂ CN ₂)	0.5-50 ppm	5 ppm		0.1 ppm	2.5 ppm	5 ppm	10									5-90% RH ⁴
	Tetrakis (Dimethylamido) Titanium (TDMAT, C ₂ H ₂ N ₂ Ti)	0.01-20 ppm	n/a		0.05 ppm	1 ppm	2 ppm	14									5-90% RH ⁴
	Trimethylamine (TMA, C ₃ H ₉ N)	0.3-50 ppm	5 ppm		0.05 ppm	2.5 ppm	5 ppm	10									1-90% RH ⁴
Phosgene	Phosgene (COCl ₂)	2-2000 ppb	100 ppb		5 ppb	50 ppb	100 ppb	15	30	A	Flex CC XP Phosgene	1265-4007	n/a	1265-3007	90	0-40	1-95% RH
Diisocyanates	Toluene Diisocyanate (TDI, C ₉ H ₇ N ₂ O ₂)	0.5-200 ppb	1 ppb	2015 NIC (1ppb TWA; 5ppb STEL)	0.6 ppb	1 ppb	2 ppb	10	0.15	no filter	Flex CC Diisocyanates	1265-4006	1265-3006	n/a	30	0-40	25-65% RH ⁴
	Methylene Bisphenyl Isocyanate (MDI, C ₁₂ H ₁₀ N ₂ O ₂)	0.5-200 ppb	5 ppb		0.6 ppb	2.5 ppb	5 ppb	10									5-80% RH
	Hexamethylene Diisocyanate (HDI, C ₉ H ₁₂ N ₂ O ₂)	0.5-150 ppb	5 ppb		0.6 ppb	2.5 ppb	5 ppb	30									15-85% RH ⁴
Hydrazines	Hydrazine (N ₂ H ₄)	3-1000 ppb	10 ppb		5 ppb	5 ppb	10 ppb	220	3	no filter	Flex CC Hydrazines	1265-4008	1265-3008	n/a	30	0-40	15-90% RH
	Monomethyl Hydrazine (MMH, CH ₃ N ₂)	3-2000 ppb	10 ppb		5 ppb	5 ppb	10 ppb	110	5								20-75% RH
	Dimethyl Hydrazine (UDMH, C ₂ H ₈ N ₂)	3-2000 ppb	10 ppb		5 ppb	5 ppb	10 ppb	110	5								10-70% RH
Hydrogen Cyanide (HCN)	0.2-30 ppm	4.7 ppm		0.5 ppm	2.4 ppm	4.7 ppm	15	30	A	Flex CC Hydrogen Cyanide	1265-4009	n/a	n/a	15	0-30	15-70% RH ⁴	
Sulphur Dioxide (SO ₂)	10-2500 ppb	250 ppb		25 ppb	120 ppb	250 ppb	12	30	B, C	Flex CC Sulfur Dioxide	1265-4005	1265-3005	n/a	30	0-40	25-90% RH ⁴	
Ozone (O ₃)	20-1000 ppb	100 ppb		25 ppb	50 ppb	100 ppb	55	5	no filter	Flex CC Ozone	1265-4011	1265-3011	n/a	30	0-40	15-90% RH	
Hydrogen Peroxide (H ₂ O ₂)	0.1-3 ppm	1 ppm		0.2 ppm	0.5 ppm	1.0 ppm	27	5	no filter	Flex CC Hydrogen Peroxide	1265-4010	1265-3010	n/a	30	0-40	35-50% RH ⁴	

1 Source: ACGIH 2014.

2 A = 780248 (disposable), B = 1830-0055 (filter membrane 0235-1072 must be replaced every 30 days), C = 1991-0147 (disposable)

Outside of RH range:

- Tends to have lower response at higher humidities.
- Tends to increase sensitivity at higher humidities (due to the chemistry of the reaction).
- Tends to under-report at higher humidities (typically >75% RH) due to the gas characteristics to adhere or decompose on contact with water/moisture. The response seems to be lower but the actual gas concentration under these high humidity conditions will be lower than expected.
- Tends to under-report in dry conditions (<25-30% RH).
- Depending on the combination of temperature and humidity, even within the ranges specified above, a unit's performance efficiency can be influenced due to condensation, physical tape material changes, or optical changes. Consult Honeywell Analytics' Service Department.
- Refer to TechNotes 971131 (ChemCassette®-based Instrument Accuracy and Precision) and 1998-0219 (Protocol for Testing Gas Detectors).
- Prolonged exposure to high levels of HBr (2xTLV or above) can condense in the system and may require purging with dry gas.
- For information about the expiration date of the ChemCassette, refer to the *Review > ChemCassette* section on page 36 of the SPM Flex User Manual.
- The number of days elapsed from the ChemCassette cartridge's installation. When that limit is reached, the detector will issue a maintenance fault. Honeywell Analytics recommends then replacing the cartridge. However, if it has been removed and properly stored in the interim, the user has the option of clearing the maintenance fault and continuing to use the cartridge. Advance the tape two turns when resuming monitoring.