

Explosive Gases and Calibration Gas

Table 1: Calibration coefficients of explosive gases for catalytic detectors

Gas name	Molecular formula	LEL (%)	UEL (%)	Flash point (°C)	Vapor density	Coefficient* Calibration gas CH4 (methane)	Coefficient* Calibration gas H2 (Hydrogen)	Coefficient* Calibration gas C4H10 (Butane)	Coefficient* Calibration gas C5H12 (Pentane)
Acetone	C3H6O	2.15	13.00	-18	2.1	1.65	1.20	0.90	0.80
Acetylene	C2H2	1.50	100	-18	0.9	2.35	1.75	1.25	1.15
Ammonia	NH3	15.00	30.20	< -100	0.6	0.90	0.65	0.50	0.45
Butane	C4H10	1.50	8.50	-60	2.0	1.90	1.50	1.00	0.90
Ethane	C2H6	3.00	15.50	135	1.0	1.50	1.10	0.80	0.75
Ethanol	C2H6O	3.30	19.00	13	1.6	2.15	1.70	1.30	1.00
Premium unleaded gasoline (95)	/	1.10	~6.0	21	3 to 4	1.80	1.35	1.00	0.90
Ethylene (Ethene)	C2H4	2.70	34.00	-135	1.0	1.65	1.20	0.90	0.80
L.P.G.	Prop+But	1.65	~9.0	< -50	1.9	1.65	1.20	0.90	0.80
Diesel	Mixture	0.60	~6.0	55	> 4	3.20	2.60	1.70	1.55
Natural gas	CH4	5.00	15.00	-188	0.6	1.05	0.75	0.60	0.55
Heptane	C7H16	1.10	6.70	-4	3.5	2.20	1.80	1.20	1.05
Hexane	C6H14	1.20	7.40	-23	3.0	2.10	1.70	1.15	1.05
Hydrogen	H2	4.00	75.60	-	0.069	1.25	1.00	0.70	0.60
Methane	CH4	5.00	15.00	-188	0.55	1.00	0.75	0.55	0.50
Nonane	C9H20	0.70	5.60	31	4.4	4.00	3.20	2.65	2.10
Octane	C8H18	1.00	6.00	12	3.9	2.70	2.00	1.45	1.30
Pentane	C5H12	1.40	8.00	-49	2.5	2.10	1.70	1.15	1.00
Propane	C3H8	2.00	9.5	-104	1.6	1.55	1.10	0.85	0.75
Propylene	C3H6	2.00	11.70	-107.8	1.5	1.65	1.20	0.90	0.80
Styrene	C8H8	1.1	8.00	31	3.6	6.30	5.30	3.50	3.00
Toluene	C7H8	1.20	7	5	3.1	4.00	2.95	2.15	1.90
Xylene	C8H10	1.00	7.60	25	3.7	4.00	2.90	2.15	1.90

Cells with a gray background: recommended gas for calibrating the detector

Example (first row of the table)

Calibration of an “acetone” detector using a calibration gas with 1% butane

Value to be displayed:

1% (injected butane) × 100 × 0.90 (butane/acetone coefficient) = 60% LEL

1.5% (butane LEL)

Note:

- LEL values vary according to the source.
- Coefficients are accurate to ± 15%.