

TECHNICAL DATA

PHYSICAL PROPERTIES

Name	Gas Density		Boiling Point		Critical Press		Critical Temp		Mole Wt.	Specific Volume		Specific Gravity (air=1)
	#/ft ³	kg/m ³	°F	°C	psia	kg/cm ²	°F	°C		ft ³ /#	m ³ /kg	
Acetylene	0.0733	a 1.17	a-119.2	-84.0	897.8	63.1	95.36	35.20	26.04	14.43	0.901	0.9080
Air	0.0807	a 1.29	a-317.8	-194.4	547.4	38.5	-221.08	-140.60	28.85	13.30	0.830	1.0000
Ammonia	0.0450	0.72	-28.1	-33.4	1636.1	115.0	270.32	132.40	17.03	22.60	1.411	0.5970
Argon	0.1034	1.66	-302.6	-189.4	705.4	49.6	-188.32	-122.40	39.95	9.67	0.604	1.3780
Arsine	0.2000	3.20	-80.5	-62.5	957.0	67.3	211.82	99.90	77.95	5.00	0.312	2.6900
Boron trichloride	0.3030	4.85	54.3	12.4	561.4	39.5	353.84	178.80	117.17	3.30	0.206	4.0300
Boron trifluoride	0.1777	2.85	-147.6	-99.8	723.0	50.8	10.04	-12.20	67.81	5.60	0.350	2.3870
Butadiene, 1,3-	0.1516	a 2.43	a 24.1	-4.4	627.5	44.1	305.60	152.00	54.09	6.90	0.431	1.8780
Butane, n-	0.1588	2.54	31.1	-0.5	550.7	38.7	305.60	152.00	58.12	6.40	0.400	2.1100
Butene, 1-	0.1477	b 2.37	b 20.7	-6.3	583.4	41.0	295.52	146.40	56.12	6.70	0.418	2.0000
Butene, 2- (cis)	0.1502	2.41	38.7	3.7	609.9	42.9	324.32	162.40	56.12	6.70	0.418	1.9970
Butene, 2- (trans)	0.1502	2.41	33.6	0.9	595.2	41.8	311.90	155.50	56.12	6.70	0.418	1.9970
Carbon dioxide	0.1140	a 1.83	a -109.1	-78.4	1070.6	75.3	87.80	31.00	44.01	8.76	0.5471	1.5220
Carbon monoxide	0.0781	a 1.25	a -312.7	-191.5	507.4	35.7	-220.36	-140.20	28.01	13.80	0.862	0.9670
Chlorine	0.1859	2.98	-29.3	-34.1	1118.4	78.6	291.20	144.00	70.91	5.40	0.337	2.4900
Deuterium	0.0112	0.18	-417.1	-249.5	239.2	16.8	-390.82	-234.90	4.03	95.90	5.987	0.1497
Diborane	0.0715	1.15	-134.5	-92.5	581.0	40.8	40.80	62.10	27.67	13.98	0.873	0.9500
Dichlorosilane	0.2601	4.17	46.8	8.2	678.2	47.7	348.80	176.00	101.01	3.83	0.239	3.5200
Dimethyl ether	0.1198	b 1.92	b -12.6	-24.8	764.2	53.7	260.42	126.90	46.07	8.40	0.524	1.6210
Dimethylamine	0.1151	b 1.84	b 44.4	6.9	770.1	54.1	328.28	164.60	45.09	8.60	0.537	1.5570
Disilane	0.1790	2.87	6.3	-14.3	747.2	52.5	303.53	150.85	62.22	6.21	0.388	2.3800
Ethane	0.0775	b 1.24	b -127.5	-88.6	712.8	50.1	90.32	32.40	30.07	12.80	0.799	1.0480
Ethyl chloride	0.1649	b 2.64	b 54.1	12.3	764.2	53.7	368.96	187.20	64.52	6.00	0.375	2.2300
Ethylene	0.0787	a 1.26	a -154.7	-103.7	742.1	52.2	49.82	9.90	28.05	13.80	0.862	0.9750
Ethylene oxide	0.1121	1.80	50.9	10.5	1043.0	73.3	384.44	195.80	44.05	8.78	0.548	1.4900
Halocarbon-14	0.2280	3.65	-198.3	-127.9	542.4	38.1	-49.90	-45.50	88.00	4.39	0.274	3.0380
Halocarbon-22	0.2335	3.74	-41.0	-41.0	721.9	50.8	204.80	96.00	86.47	4.40	0.275	3.1100
Halocarbon-23	0.1820	2.92	-115.6	-82.0	697.0	49.0	78.26	25.70	70.01	5.50	0.343	2.2636
Halocarbon-116	0.3608	5.78	-108.8	-78.2	432.0	30.4	67.50	24.30	138.01	2.80	0.175	4.7730
Halocarbon-134A	0.4683	b 7.50	b -15.7	-26.5	589.6	41.5	213.98	101.10	102.03	2.14	0.134	
Halocarbon-218	0.5000	8.01	-34.1	-36.7	388.7	27.3	161.42	71.90	188.02	2.02	0.126	6.6900
Helium	0.0103	0.16	-452.1	-268.9	33.2	2.3	-450.40	-268.00	4.00	96.60	6.031	0.1380

Note: Density: a = 0°C b = 25°C All others at NTP

PHYSICAL PROPERTIES

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	#/ft ³	kg/m ³	°F	°C	psia	kg/cm ²	°F	°C		ft ³ /#	m ³ /kg	
Hydrogen	0.0050	0.08	-423.0	-252.8	188.1	13.2	-399.82	-239.90	2.02	191.70	11.968	0.0696
Hydrogen bromide	0.2080	3.33	-88.1	-66.7	1234.5	86.8	193.64	89.80	80.92	4.80	0.300	2.7700
Hydrogen chloride	0.0950	1.52	-121.0	-85.0	1197.7	84.2	124.52	51.40	36.46	10.60	0.662	1.2680
Hydrogen fluoride	0.0520	0.83	67.1	19.5	940.5	66.1	370.40	188.00	20.01	19.30	1.205	0.6900
Hydrogen sulfide	0.0890	1.43	-76.5	-60.3	1306.5	91.9	212.72	100.40	34.08	11.23	0.701	1.1890
Isobutane	0.1553	2.49	10.9	-11.7	529.1	37.2	275.00	135.00	58.13	6.50	0.406	2.0640
Isobutylene	0.1440	b 2.31	b 19.6	-6.9	580.2	40.8	292.46	144.70	56.12	6.70	0.418	1.9470
Krypton	0.2170	3.48	-244.1	-153.4	796.5	56.0	-82.84	-63.80	83.80	4.61	0.288	2.8990
Methane	0.0448	a 0.72	a -258.7	-161.5	673.1	47.3	-115.78	-82.10	16.04	23.70	1.480	0.5550
Methyl bromide	0.2464	b 3.95	b 38.4	3.6	757.0	53.2	381.20	194.00	94.94	4.10	0.256	3.3550
Methyl chloride	0.1319	b 2.11	b -11.6	-24.2	2438.1	171.4	289.58	143.10	50.49	7.60	0.474	1.7840
Monomethylamine	0.0813	b 1.30	b 20.7	-6.3	1081.6	76.0	314.42	156.90	31.06	12.10	0.755	1.0800
Natural gas									17.66	24.00	1.498	
Neon	0.0520	0.83	-411.0	-246.1	394.7	27.8	-379.66	-228.70	20.18	19.21	1.199	0.6960
Nitric oxide	0.0767	b 1.23	b -241.2	-151.8	949.4	66.7	-135.22	-92.90	30.01	13.00	0.812	1.0360
Nitrogen	0.0725	1.16	-320.4	-195.8	492.2	34.6	-237.82	-149.90	28.01	13.80	0.862	0.9670
Nitrogen dioxide	0.2119	3.39	70.2	21.2	1469.6	103.3	316.76	158.20	46.01	4.70	0.293	2.6200
Nitrogen trifluoride	0.1860	2.98	-200.2	-129.0	657.2	46.2	-38.74	-39.30	71.00	5.40	0.337	2.4600
Nitrous oxide	0.1150	1.84	-127.3	-88.5	1052.2	74.0	97.52	36.40	44.01	8.70	0.543	1.5300
Oxygen	0.0828	1.33	-297.4	-183.0	731.4	51.4	-181.48	-118.60	32.00	12.10	0.755	1.1050
Phosphine	0.0875	1.40	-125.9	-87.7	947.9	66.6	124.88	51.60	34.00	11.40	0.712	1.1840
Phosphorous pentafluoride	0.3340	5.35	-120.1	-84.5	492.3	34.6	66.20	19.00	125.97	3.10	0.194	4.4600
Propane	0.1166	1.87	-43.8	-42.1	618.7	43.5	206.24	96.80	44.11	8.50	0.531	1.5500
Propylene	0.1114	1.79	-53.9	-47.7	667.1	46.9	197.24	91.80	42.08	9.06	0.566	1.4800
Silane	0.0837	1.34	-168.7	-111.5	702.5	49.4	25.88	-3.40	32.12	12.04	0.752	1.1140
Silicon tetrachloride	0.4420	7.08	135.7	57.6	573.3	40.3	454.82	234.90	169.90	2.28	0.142	5.8000
Silicon tetrafluoride	0.2684	4.30	-130.4	-90.2	539.0	54.6	6.40	-14.20	104.08	3.70	0.231	1.5900
Sulfur dioxide	0.1666	2.67	14.0	-10.0	1143.5	80.4	315.68	157.60	64.06	5.90	0.368	2.2630
Sulfur hexafluoride	0.3845	6.16	-82.8	-63.8	545.2	38.3	113.90	45.50	146.05	2.50	0.156	5.1100
Trichlorosilane	0.3500	b 5.61	b 89.6	32.0	597.3	42.0	402.08	205.60	135.45	2.85	0.178	4.7000
Trimethylamine	0.1628	2.61	37.2	2.9	590.7	41.5	320.20	160.10	59.11	6.40	0.400	2.0870
Tungsten hexafluoride	0.7930	12.70	67.1	19.5	629.5	44.3	339.44	170.80	297.84	1.24	0.077	10.8000
Xenon	0.3420	5.48	-162.6	-108.1	846.7	59.5	61.88	16.60	131.30	2.90	0.181	4.5600

Note: Density: a = 0°C b = 25°C All others at NTP

TECHNICAL DATA

PHYSICAL PROPERTIES

Name	Chemical Formula	1998 TLV ppm mg/m ³		Flammable Range LEL air UEL air		Odor	IDLH ppm
Acetylene	C ₂ H ₂	Simple Asphyxiant		2.5	100	Ethereal	
Air	N/A	N/A	N/A	N/A	N/A	None	
Ammonia	NH ₃	25	17	16	25	Pungent, Irritating	300
Argon	Ar	Simple Asphyxiant		Nonflammable		None	
Arsine	AsH ₃	0.05	0.16	5.1	78	Garlic-like	3
Boron trichloride	BCl ₃	None Established		Nonflammable		Pungent, Irritating	100
Boron trifluoride	BF ₃	C 1.0	C 2.8	Nonflammable		Pungent, Suffocating	25
Butadiene, 1,3-	CH ₂ :CHCH:CH ₂	2.00	4.40	2.0	11.5	Mildly Aromatic	2000
Butane, n-	C ₄ H ₁₀	800	1900	1.9	8.5	Natural Gas-like	
Butene, 1-	CH ₃ CH ₂ CH:CH ₂	None Established		1.6	10.0	Natural Gas-like	
Butene, 2- (cis)	CH ₃ CH:CHCH ₃	None Established		1.7	9.0	Natural Gas-like	
Butene, 2- (trans)	CH ₃ CH:CHCH ₃	None Established		1.8	9.7	Natural Gas-like	
Carbon dioxide	CO ₂	5000	9000	Nonflammable		None	40000
Carbon monoxide	CO	25	29	12	75	None	1200
Chlorine	Cl ₂	0.50	1.50	Nonflammable		Pungent, Irritating	10
Deuterium	D ₂	Simple Asphyxiant		5.0	75	None	
Diborane	B ₂ H ₆	0.10	0.15	0.8	98	Repulsive	15
Dichlorosilane	SiH ₂ Cl ₂	None Established		4.7	99	Pungent, Suffocating	100
Dimethyl ether	(CH ₃) ₂ O	None Established		3.4	27	Ethereal	
Dimethylamine	(CH ₃) ₂ NH	5.00	9.20	2.8	14.4	Fish-like	500
Disilane	(SiH ₃) ₂	None Established*		Unknown, Pyrophoric		Repulsive, Choking	
Ethane	C ₂ H ₆	Simple Asphyxiant		3.0	12.5	None	
Ethyl chloride	CH ₃ CH ₂ Cl	100	264	3.8	15.4	Pungent, Ethereal	3800
Ethylene	CH ₂ :CH ₂	Simple Asphyxiant		2.7	36	Sweet	
Ethylene oxide	C ₂ H ₄ O	1.00	1.80	3.0	100	Ethereal	800
Halocarbon-14	CF ₄	None Established		Nonflammable		None	
Halocarbon-22	CHClF ₂	1000	3540	Nonflammable		Nearly Odorless	
Halocarbon-23	CHF ₃	None Established		Nonflammable		None	
Halocarbon-116	C ₂ F ₆	None Established		Nonflammable		None	
Halocarbon-134A	CF ₃ CH ₂ F	None Established		Nonflammable		Slight Ethereal	
Halocarbon-218	C ₃ F ₈	None Established		Nonflammable		Slightly Sweet	
Helium	He	Simple Asphyxiant		Nonflammable		None	
Hydrogen	H ₂	Simple Asphyxiant		4.0	75	None	

*Praxair recommends compliance with the 5ppm TLV-TWA for silane

PHYSICAL PROPERTIES

Name	Chemical Formula	1998 TLV		Flammable Range		Odor	IDLH ppm
		ppm	mg/m ³	LEL air	UEL air		
Hydrogen bromide	HBr	C 3.0	C 9.9	Nonflammable		Irritating	30
Hydrogen chloride	HCl	C 5.0	C 7.5	Nonflammable		Pungent, Suffocating	50
Hydrogen fluoride	HF	C 3.0	C 2.5	Nonflammable		Sharp, Irritating	30
Hydrogen sulfide	H ₂ S	10	14	4.3	46	Rotten Eggs	100
Isobutane	CH(CH ₃) ₃	None Established		1.8	8.4	Slight	
Isobutylene	(CH ₃) ₂ C:CH ₂	None Established		1.8	9.6	Coal Gas	
Krypton	Kr	Simple Asphyxiant		Nonflammable		None	
Methane	CH ₄	Simple Asphyxiant		5.0	15	None	
Methyl bromide	CH ₃ Br	1.00	4.00	10	14.5	Chloroform-like	250
Methyl chloride	CH ₃ Cl	50	103	8.1	17.4	Faintly, Sweet Ethereal	2000
Monomethylamine	CH ₃ NH ₂	5.00	9.22	4.9	20.7	Fish-like	100
Natural gas	N/A	None Established		3.8	17	Natural Gas	
Neon	Ne	Simple Asphyxiant		Nonflammable		None	
Nitric oxide	NO	25	31	Nonflammable		Slightly Irritating	100
Nitrogen	N ₂	Simple Asphyxiant		Nonflammable		None	
Nitrogen dioxide	NO ₂	3.00	5.60	Nonflammable		Irritating	20
Nitrogen trifluoride	NF ₃	10	29	Nonflammable		Mold-like	1000
Nitrous oxide	N ₂ O	50	90	Nonflammable		Slightly Sweet	
Oxygen	O ₂	N/A	N/A	Nonflammable		None	
Phosphine	PH ₃	0.30	0.42	1.6	98	Garlic-Like	50
Phosphorous pentafluoride	PF ₅	None Established		Nonflammable		Irritating	
Propane	C ₃ H ₈	2500	4510	2.1	9.5	Natural Gas-like	2100
Propylene	CH ₂ :CHCH ₃	Simple Asphyxiant		2.0	11.1	Slightly Sweet	
Silane	SiH ₄	5.00	6.60	1.4	96	Choking	
Silicon tetrachloride	SiCl ₄	None Established		Nonflammable		Pungent, Suffocating	100
Silicon tetrafluoride	SiF ₄	None Established		Nonflammable		Suffocating	
Sulfur dioxide	SO ₂	2.00	5.20	Nonflammable		Sharp, Pungent	100
Sulfur hexafluoride	SF ₆	1000	5973	Nonflammable		None	
Trichlorosilane	SiHCl ₃	None Established		7.0	83	Pungent, Suffocating	100
Trimethylamine	(CH ₃) ₃ N	5.00	12	2.0	11.6	Fish-like	
Tungsten hexafluoride	WF ₆	None Established		Nonflammable		None	30
Xenon	Xe	Simple Asphyxiant		Nonflammable		None	