

Thermal Conductivity of Gases with Minimum Sensitivity and ISL Gas Groups										
Gas Type			Conductivity	difference	Minimum		Gas	Calculated	Formula	Min
Name	Trade	Chemical	400 K	from air	Sensitivity	cc/sec	Group	or Tested		
	Name	Formula	mW/m	mW/m	ppm		0-3	with Error	Weight	Sensitivity
Air			33.3	0	N/A	N/A	N/A	N/A		
Helium		He	190.6	157.3	130	2.17E-05	0	T +/-20%	4.00	0.11
Hydrogen		H ₂	230.4	197.1	100	1.67E-05	0	T +/-25%	2.02	0.04
Ammonia		NH ₃	37.4	4.1	310	5.17E-05	1	T +/-10%	17.03	1.13
Butane		C ₄ H ₁₀	28.4	-4.9	- 310	-5.17E-05	1	T +/-10%	58.12	- 3.87
Krypton		Kr	12.3	-21	- 749	-1.25E-04	1	C	83.80	- 13.47
Neon		Ne	60.3	27	583	9.71E-05	1	C	20.18	2.52
Sulfur dioxide		SO ₂	14.3	-19	- 828	-1.38E-04	1	C	64.07	- 11.39
Sulfur hexa fluoride		SF ₆	20.6	-12.7	- 290	-4.83E-05	1	T +/-35%	146.06	- 9.09
Trichloromethane		CHCl ₃	11.1	-22.2	- 709	-1.18E-04	1	C	119.38	- 18.16
Xenon		Xe	7.3	-26	- 605	-1.01E-04	1	C	131.29	- 17.05
1,1,2-Trichlorotrifluoroethane	R113	C ₂ Cl ₃ F ₃	13.6	-19.7	- 798	-1.33E-04	1	C	187.38	- 32.12
1,2-Dichlorotetrafluoroethane	R114	C ₂ Cl ₂ F ₄	15.7	-17.6	- 894	-1.49E-04	1	C	170.92	- 32.79
Dichlorodifluoromethane	R12	CCl ₂ F ₂	15	-18.3	- 860	-1.43E-04	1	C	120.91	- 22.31
	R1301		77.0	43.69	360	6.00E-05	1	C		-
Tetrafluoroethane	R134a	C ₂ H ₂ F ₄	12.6	-20.70	- 760	-1.27E-04	1	T +/-20%	102.03	- 16.65
Chlorodifluoromethane	R22	CHF ₂ Cl	59.5	26.22	600	1.00E-04	1	C	86.47	11.14
Acetone		C ₃ H ₆ O	20.2	-13.1	- 1,201	-2.00E-04	2	C	46.07	- 11.88
Argon		Ar	22.6	-10.7	- 1,470	-2.45E-04	2	C	39.95	- 12.61
Boron trifluoride		BF ₃	24.6	-8.7	- 1,808	-3.01E-04	2	C	67.81	- 26.32
Carbon dioxide		CO ₂	25.1	-8.2	- 1,918	-3.20E-04	2	C	44.01	- 18.12
Deuterium oxide		D ₂ O	27	-6.3	- 2,497	-4.16E-04	2	C	20.04	- 10.74
Diethyl ether		C ₄ H ₁₀ O	25	-8.3	- 1,895	-3.16E-04	2	C	74.12	- 30.15
Ethanol		C ₂ H ₅ OH	25.8	-7.5	- 2,097	-3.50E-04	2	C	46.07	- 20.74
Hexane		C ₆ H ₁₄	23.4	-9.9	- 1,589	-2.65E-04	2	C	86.17	- 29.39
Hydrogen sulphide		H ₂ S	20.5	-12.8	- 1,229	-2.05E-04	2	C	34.08	- 8.99
Hydrogen chloride		HCL	19.5	-13.8	- 1,140	-1.90E-04	2	C	36.46	- 8.92
Isobutane		C ₄ H ₁₀	27.9	-5.4	- 2,913	-4.85E-04	2	C	58.12	- 36.34
Methane		CH ₄	49.1	15.8	996	1.66E-04	2	C	16.04	3.43
Methanol		CH ₄ O	26.2	-7.1	- 2,215	-3.69E-04	2	C	32.04	- 15.24
Nitrous oxide		N ₂ O	26	-7.3	- 2,155	-3.59E-04	2	C	44.01	- 20.36
Pentane		C ₅ H ₁₂	24.9	-8.4	- 1,873	-3.12E-04	2	C	72.15	- 29.00
Perfluorocyclobutane	C318	C ₄ F ₈	19.5	-13.8	- 1,140	-1.90E-04	2	C	200.03	- 48.95
Propane		C ₃ H ₈	30.6	-2.7	- 760	-1.27E-04	2	T +/-20%	44.09	- 7.19
Tetra fluoromethane	R14	CF ₄	24.1	-9.2	- 1,710	-2.85E-04	2	C	88.00	- 32.30
Water		H ₂ O	27.1	-6.2	- 2,537	-4.23E-04	2	C	18.02	- 9.81
Acetylene		C ₂ H ₂	45.4	12.1	1,000	1.67E-04	3	T +/-25%	26.04	5.60
Carbon monoxide		CO	32.3	-1	-15,730	-2.62E-03	3	C	28.01	- 94.58
Ethane		C ₂ H ₆	35.4	2.1	7,490	1.25E-03	3	C	32.08	51.58
Ethylene		C ₂ H ₄	34.6	1.3	12,100	2.02E-03	3	C	28.05	72.86
Nitric oxide		NO	33.1	-0.2	-78,650	-1.31E-02	3	C	30.01	- 506.67
Nitrogen		N ₂	32.3	-1	-15,730	-2.62E-03	3	C	28.01	- 94.58
Oxygen		O ₂	33.7	0.4	39,325	6.55E-03	3	C	32.00	270.14
Trichlorofluoromethane	R11	CFCl ₃	35.9	2.62	6,000	1.00E-03	3	C	137.37	176.93

Bold indicates result of "Tests" all other figures are calculated

The thermal characteristics give an idea of expected result however as there is a heating effect which is not considered in the theory therefore actual results do differ.

Results assume nozzle off

Nozzle dilutes leak 10 to 1 and assumes only 30% capture