A-GAS®

R404A

R404A is a zeotropic HFC refrigerant blend of R125, R143a and R134a. It is widely used in medium and low temperature refrigeration especially in the supermarket sector and for refrigerated transport. R404A was designed as a replacement for CFC R502 and closely matches its properties.

Pack Sizes

- 12kg Cylinder
- 22kg Cylinder
- 65kg Cylinder

Applications

- Transport refrigeration
- Supermarket display cases, cold rooms
- Ice machines – process cooling

Usage Instructions

- Compatible with POE lubricants
- Charging must be done in liquid phase
- R404A cannot be discharged to atmosphere

Always recover refrigerants into an A-Gas reclaim cylinder

Possible Replacements

- R449A
- R452A

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R134A

R134a is an HFC refrigerant used on its own as a pure refrigerant and also as a component in many blends. It is widely used in automotive air conditioning and medium temperature refrigeration in applications where R12 would have previously been used.

Pack Sizes

- 12kg Cylinder
- 22kg Cylinder
- 65kg Cylinder
- 12kg Cylinder + UV
- 22kg Cylinder + UV

Applications

- Automotive air conditioning systems
- Heat pumps, chillers
- Transport refrigeration, commercial cooling

Usage Instructions

- Compatible with POE and PAG lubricants
- Charging can be carried out either in vapour or liquid phase
- R134a cannot be discharged to atmosphere

Always recover refrigerants into an A-Gas reclaim cylinder

Possible Replacements

- R513A

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R410A

R410A is a zeotropic HFC blend of R125 and R32. In Australia R410A is a popular product for commercial and residential air conditioning systems as an alternative to R22. R410A exhibits higher pressures than R22 so is used in new equipment rather than as a retrofit gas.

Pack Sizes

- 10kg Cylinder
- 18kg Cylinder
- 60kg Cylinder

Applications

- Domestic and commercial air-conditioning

Usage Instructions

- Higher pressure - needs specific equipment
- Compatible with POE lubricants
- Charging must be done in liquid phase
- R410A cannot be discharged to atmosphere. Always recover refrigerants into an A-Gas reclaim cylinder

Possible Replacements

- R32

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R32

R32 refers to Difluoromethane a flammable HFC refrigerant that has been used extensively as a component of 400 series blends but not on its own until recently. R32 is now being used by air conditioning OEMS as a low GWP HFC alternative to R410A.

Pack Sizes

- 9kg Cylinder

Applications

- Domestic and commercial air-conditioning

Usage Instructions

- R32 cannot be used as a 'drop-in' replacement for R410A in existing systems
- Charging can be done in liquid or vapour phase
- R32 cannot be discharged to atmosphere.

Always recover refrigerants into an A-Gas reclaim cylinder

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R22

R22 is a single component HCFC refrigerant that has historically been used for air conditioning, medium temperature and low temperature refrigeration. R22 causes ozone depletion and as a result is subject to legislation that is phasing down its use in Australia. R22 will still be available until 2030 and can be obtained as a recycled product (AHRI 700 standard) from MFW.

Pack Sizes

- 12kg Cylinder
- 22kg Cylinder
- 65kg Cylinder

Applications

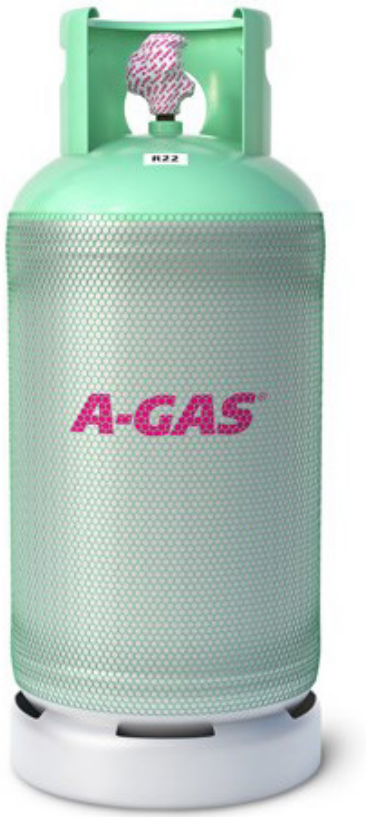
- Medium and low temperature commercial and industrial refrigeration and freezer rooms
- Cold stores, cabinets, water chillers & process cooling

Usage Instructions

- Compatible with mineral, alkylbenzene and POE lubricant R22 cannot be discharged to atmosphere.
- Always recover refrigerants into an A-Gas reclaim cylinder
- Charging can be carried out either in vapour or liquid phase

Possible Replacements

- R438A
- R407c



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R407C

R407C is a zeotropic HFC refrigerant blend of R125, R32 and R134a. R407C is predominantly used in commercial and residential air conditioning systems and has very similar properties to R22. With the quota enforced decrease in R22 use, R407C has been used as an alternative to R22 in new equipment, it is also being used to replace R22 in some existing system retrofits.

Pack Sizes

- 11kg Cylinder
- 20kg Cylinder
- 65kg Cylinder

Applications

- Residential and commercial air conditioning systems
- Direct expansion fluid chillers and some commercial refrigeration systems

Usage Instructions

- Compatible with POE lubricants
- Charging must be done in liquid phase
- R407C cannot be discharged to atmosphere.
- Always recover refrigerants into an A-Gas reclaim cylinder

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A-GAS®

R449A

R449A (Opteon™ XP40) is a non-ozone depleting, low global warming potential (GWP) hydrofluoro-olefin (HFO) based refrigerant with an optimal balance of properties to replace R404A/R507, R22, or R407 series in low and medium temperature commercial and industrial applications.

R449a is suitable for new installations, as well as for retrofit of existing systems, offering improved energy efficiency and environmental properties.

Pack Sizes

- 11kg Cylinder
- 18kg Cylinder
- 55kg Cylinder

Applications

- Supermarkets -centralized rack systems, distributed systems, walk-in coolers
- Food service (e.g. condensing units)
- Cold Storage

Usage Instructions

- XP40 can be used in new equipment/retrofit of existing systems
- Compatible with existing equipment design/ lubricants
- Always recover XP40 into a A-Gas reclaim cylinder

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R438A

R438A (Freon™/Isceon MO99) is a HFC blend, used as a replacement for R22 in domestic, industrial and commercial air conditioning systems.

It is also a retrofit replacement for R22 in low and medium temperature refrigeration systems and DX chiller systems. The manufacturer of the refrigerant recommends the use of the product in the following applications: Commercial air conditioning, roof top units, indoor packaged units, DX chillers, split systems, Residential Air Conditioning, Refrigeration (low and medium Temperature)

Pack Sizes

- 12kg Cylinder
- 20kg Cylinder
- 60kg Cylinder

Applications

- Commercial Air Conditioning, roof top units, indoor packaged units, DX chillers, split systems.
- Residential Air Conditioning
- Refrigeration (low and medium temperature)

Usage Instructions

- Compatible with mineral, alkylbenzene and POE lubricant
- R438A cannot be discharged to atmosphere, Always recover refrigerants into an A-Gas reclaim cylinder
- If retrofitting from R22 to R438A, it is not always necessary to replace the existing lubricant with PO.
- Always read the retrofit guidelines before using the product.

- Substitute for R22
- Zeotropic refrigerant blend containing R32, R125, R134a, Butane and Ipentane
- Refrigerant must be charged from the liquid phase to ensure accurate composition
- A-Gas refrigerant cylinders have dual port valves, making liquid offtake easier
- Non-flammable with a safety classification of A1
- Compressors can be charged with most current oils but polyolester oil is preferred, contact the compressor manufacturer for more information
- Lowest Global Warming Potential (GWP) of Isceon range

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A-GAS®

R452A

R452A (Opteon™ XP44) is a non-ozone depleting, low global warming potential (GWP) hydrofluoro-olefin (HFO) based refrigerant to replace R404A/R507A in low and medium temperature commercial, industrial, and transport refrigeration applications.

R452A is suitable in new equipment, as well as for retrofit of existing systems, offering comparable energy efficiency with improved environmental properties, but without increased compressor discharge temperatures.

Pack Sizes

- 11kg Cylinder
- 18kg Cylinder
- 55kg Cylinder

Applications

- Low and medium temperature transport DX refrigeration - refrigerated trucks, vans, reefer containers
- Low and medium temperature commercial and industrial DX refrigeration

Usage Instructions

- XP44 can be used in new equipment/retrofit of existing systems
- Compatible with existing equipment design/ lubricants
- Matches discharge temperature and mass flow rate of R404A and R507
- Always recover XP44 into a reclaim cylinder

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A-GAS®

R513A

R513A (Opteon™ XP10) is a non-ozone depleting, low global warming potential (GWP) hydrofluoro-olefin (HFO) based refrigerant developed to replace R134a in medium-temperature commercial and industrial application, including centrifugal chillers.

R513A is an excellent capacity and efficiency match for R134a in new systems, as well as for retrofit of existing systems, offering an optimal balance of properties including high energy efficiency and environmental sustainability.

Pack Sizes

- 12kg Cylinder
- 21kg Cylinder
- 60kg Cylinder

Applications

- Water chillers, air conditioning and heat pumps
- Medium temperature commercial and industrial DX refrigeration
- Cascade systems (especially alongside R744)

Usage Instructions

- XP10 can be used in new equipment/retrofit of existing systems
- Compatible with existing equipment design/ lubricants
- Close performance match to R134a for retrofit and new systems
- Always recover XP10 into a A-Gas reclaim cylinder

A-GAS®

Reclaim & Pump Downs

Legislation in Australia prohibits the venting of refrigerants in to the atmosphere. According to the Australia and New Zealand Refrigerant Handling Code of Practice 2007, Fluorocarbon refrigerant must not be willingly released to the atmosphere by any person by any means where the release is avoidable, including:

- **Venting refrigerant directly**
- **Charging refrigerant into equipment with identified leaks**

A-Gas has a large cylinder fleet dedicated to capturing refrigerant from systems including Reclaim and Pump Down cylinders.

Reclaim cylinders are used for the sole purpose of returning used and/or contaminated refrigerant for responsible disposal.

Pump Down cylinders are guaranteed to be internally clean and can be used for temporary refrigerant storage while a system is being serviced or repaired.

Pack Sizes - Reclaim

- 12kg
- 22kg
- 65kg
- 12kg (R32 only)

Pack Sizes - Pump Down

- 22kg
- 65kg

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A-GAS®

Nitrogen

Oxygen Free Nitrogen (OFN) is used for leak detection, strength and pressure testing and in helping to reduce oxidation when brazing.

Pack Sizes

- D size cylinder
- E size cylinder
- G size cylinder

Applications

- Commercial refrigeration
- Domestic & commercial air conditioning
- Leak testing of RAC systems
- Strength & pressure testing
- Cleaning condenser coils

Usage Instructions

- Cylinder fitted with a non-return valve to ensure that the nitrogen supply is free of contaminants
- A-Gas OFN is 99.998% pure and has less than 10PPM oxygen and less than 2PPM moisture
- A high pressure gas, use a certified nitrogen regulator
- High impact guard made to EN1964 standard
- Non-flammable and non-toxic compressed gas
- Cylinder outlet connection is 5
- 8" BSP Male Type 50, a standard fitting size for nitrogen regulators
- It won't contaminate a refrigeration system and prevents scale build up

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A-GAS®

Trace-A-Gas

Trace-A-Gas is a non-flammable mixture of Nitrogen and Hydrogen designed for use in leak detection for HVAC&R systems. Hydrogen is an ideal leak detection medium due to its exceedingly small molecular size and low viscosity, this allows it to escape easily through any leak in greater volume than other gases aiding detection.

With the use of a suitable electronic leak detector, Trace-A-Gas offers far more accurate leak detection than when using traditional techniques. This leads to enhanced environmental compliance and cost savings from reduced maintenance, lower refrigerant requirements and improved system energy efficiency.

Pack Sizes

- D size cylinder

Features & Benefits

- Trace-A-Gas™ can detect much smaller leaks than traditional methods Real time results: spend less time on site
- Test all areas of the system, including insulated or difficult-to-access pipework where leak detection spray cannot easily be used
- Reduce costs by avoiding re-work
- Hydrogen is the smallest molecule, enabling it to move rapidly through the system and quickly locate leaks
- It is up to 100 times more sensitive than leak detection bubble spray and can detect leaks as small as 5 grams per year
- The product is compatible with a standard nitrogen regulator

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A-GAS®

Oxygen & Acetylene

Oxy-acetylene is the professional engineer's choice for applications such as:

- Brazing copper pipes in refrigeration and air conditioning systems
- Brazing aluminium parts in Automotive air conditioning systems
- Welding and cutting pipe and steel in industrial fabrication applications
- Brazing dissimilar metals such as steel to copper

Pack Sizes

- D size cylinder

Features & Benefits

- Oxygen and acetylene together produce a flame temperature of approximately 3500˚C, which is significantly hotter than Propane, Propylene and MAPP gas
- The oxy-acetylene flame gives good localised heating with a minimum of wasted heat
- Cylinders are available in the convenient 'D' size providing a portable and economical product
- Compatible with most standard regulators and trolleys

A-GAS®

Flushing Solvent

SP141 is a liquid flushing solvent designed to remove contaminants and oil. A fast evaporating light aliphatic petroleum fluid with specific additives. Non-corrosive, it also acts as an effective corrosion inhibitor on bate metal surfaces. Compatible with all refrigerants and commonly used lubricants, it is a replacement for the phased out R141b and R11, making it the ideal product for cleaning all refrigeration and air conditioning system components of pipework.

Applications

- Industrial & Commercial Refrigeration
- Industrial & Commercial Air Conditioning

Pack Sizes

- 5kg

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A-GAS®

MPG Concentrate (Glycol)

A major application of heat transfer fluids is their role as secondary refrigerants. Secondary refrigerants like Mono Propylene Glycol (MPG) are used in the refrigeration industry to minimise the quantity of primary refrigerant required to meet the systems cooling requirements.

The primary refrigerant is usually expensive, a synthetic greenhouse gas or it can sometimes be a very hazardous product for the operator to handle (e.g. Ammonia or hydrocarbons). A secondary loop is therefore used to transfer the cool from the primary refrigeration unit around the system using a product with good heat transfer properties, that protects the system from corrosion and is non hazardous for the operator and the public.

A-Gas MPG Concentrate is compatible with most other Mono Propylene Glycol based heat transfer fluids, but exclusive use of the A-Gas MPG Concentrate is recommended to maximise the corrosion protection of the system.

Pack Sizes

- 20kg Pail
- 215kg Drum

Temp (°C)	Pressure kPa (gauge)														
	R134a	R407F		R404A		R409A		R407C		R410A		R32	R22	R438A*	
		Bubble	Dew	Bubble	Dew	Bubble	Dew	Bubble	Dew	Bubble	Dew			Bubble	Dew
-50	-71.874	-18.069	-42.428	-17.089	-20.32	-53.478	-71.716	-27.494	-51.104	7.657	7.2268	8.8179	-36.795	-31.968	-52.113
-48	-68.274	-9.2509	-35.602	-8.3529	-11.787	-48.276	-68.125	-19.602	-45.186	19.021	18.554	20.304	-29.877	-24.542	-46.341
-46	-64.322	0.29296	-28.155	1.082	-2.5618	-42.632	-64.189	-11.051	-38.719	31.304	30.797	32.721	-22.382	-16.497	-40.038
-44	-59.996	10.604	-20.048	11.253	7.3932	-36.519	-59.884	-1.8048	-31.667	44.555	44.005	46.121	-14.276	-7.7981	-33.17
-42	-55.27	21.725	-11.241	22.2	18.117	-29.91	-55.186	8.1763	-23.992	58.827	58.231	60.558	-5.5252	1.5922	-25.7
-40	-50.116	33.699	-1.6906	33.963	29.65	-22.779	-50.069	18.932	-15.657	74.172	73.528	76.086	3.9063	11.711	-17.593
-38	-44.508	46.571	8.646	46.581	42.033	-15.095	-44.506	30.504	-6.6211	90.647	89.95	92.762	14.054	22.597	-8.8098
-36	-38.417	60.386	19.814	60.096	55.307	-6.8303	-38.471	42.933	3.1562	108.31	107.55	110.64	24.956	34.288	0.68768
-34	-31.813	75.191	31.858	74.551	69.515	2.0452	-31.935	56.264	13.717	127.21	126.39	129.79	36.648	46.827	10.94
-32	-24.667	91.033	44.827	89.989	84.7	11.562	-24.869	70.539	25.105	147.41	146.53	150.26	49.171	60.253	21.987
-30	-16.947	107.96	58.768	106.45	100.91	21.751	-17.244	85.804	37.365	168.97	168.02	172.12	62.563	74.608	33.872
-28	-8.6217	126.02	73.731	123.99	118.18	32.645	-9.0283	102.1	50.541	191.95	190.93	195.42	76.863	89.935	46.637
-26	0.34267	145.27	89.767	142.64	136.57	44.275	-0.19145	119.49	64.681	216.42	215.32	220.24	92.114	106.28	60.327
-24	9.9795	165.76	106.93	162.46	156.11	56.675	9.299	138	79.833	242.43	241.24	246.64	108.36	123.68	74.987
-22	20.323	187.53	125.26	183.49	176.86	69.878	19.476	157.69	96.045	270.04	268.77	274.68	125.63	142.19	90.662
-20	31.41	210.64	144.83	205.78	198.87	83.919	30.373	178.61	113.37	299.33	297.97	304.43	143.99	161.84	107.4
-18	43.275	235.15	165.69	229.37	222.18	98.831	42.025	200.8	131.85	330.37	328.9	335.96	163.46	182.7	125.25
-16	55.957	261.11	187.88	254.32	246.84	114.65	54.467	224.32	151.55	363.21	361.64	369.34	184.1	204.8	144.26
-14	69.492	288.57	211.48	280.67	272.9	131.41	67.734	249.22	172.51	397.92	396.24	404.65	205.95	228.19	164.47
-12	83.919	317.6	236.54	308.48	300.42	149.15	81.864	275.54	194.8	434.58	432.78	441.94	229.06	252.92	185.95
-10	99.278	348.24	263.11	337.8	329.44	167.91	96.892	303.35	218.46	473.25	471.33	481.31	253.46	279.03	208.74
-8	115.61	380.55	291.26	368.68	360.02	187.71	112.86	332.7	243.55	514.01	511.96	522.81	279.21	306.59	232.89
-6	132.95	414.6	321.05	401.17	392.21	208.61	129.8	363.64	270.13	556.93	554.74	566.53	306.36	335.64	258.45
-4	151.35	450.44	352.55	435.33	426.07	230.63	147.76	396.22	298.26	602.08	599.74	612.55	334.96	366.22	285.49
-2	170.84	488.13	385.8	471.21	461.65	253.82	166.77	430.51	327.99	649.54	647.05	660.94	365.04	398.4	314.05
0	191.48	527.73	420.89	508.87	499.01	278.21	186.88	466.54	359.39	699.38	696.73	711.78	396.66	432.22	344.2
2	213.29	569.31	457.88	548.36	538.19	303.85	208.12	504.4	392.52	751.68	748.86	765.15	429.88	467.73	375.98
4	236.34	612.92	496.83	589.73	579.27	330.76	230.54	544.12	427.43	806.51	803.52	821.13	464.73	504.99	409.46
6	260.65	658.62	537.81	633.05	622.29	359	254.18	585.77	464.2	863.96	860.79	879.8	501.27	544.06	444.7
8	286.29	706.49	580.89	678.38	667.32	388.59	279.09	629.4	502.89	924.11	920.75	941.26	539.55	584.98	481.75
10	313.28	756.58	626.14	725.77	714.42	419.59	305.3	675.08	543.56	987.04	983.48	1005.6	579.62	627.82	520.67
12	341.69	808.95	673.64	775.29	763.65	452.02	332.86	722.87	586.28	1052.8	1049.1	1072.9	621.54	672.62	561.53
14	371.55	863.68	723.45	826.99	815.07	485.94	361.82	772.82	631.11	1121.6	1117.6	1143.2	665.35	719.45	604.4
16	402.93	920.83	775.65	880.94	868.73	521.38	392.21	825	678.13	1193.3	1189.1	1216.6	711.11	768.36	649.32
18	435.85	980.46	830.32	937.2	924.72	558.38	424.1	879.46	727.41	1268.2	1263.8	1293.3	758.88	819.4	696.37
20	470.38	1042.6	887.53	995.84	983.09	596.98	457.52	936.27	779.01	1346.3	1341.7	1373.2	808.69	872.64	745.62
22	506.57	1107.4	947.37	1056.9	1043.9	637.23	492.51	995.5	833.02	1427.7	1422.8	1456.6	860.62	928.14	797.13
24	544.46	1174.9	1009.9	1120.5	1107.2	679.17	529.14	1057.2	889.5	1512.4	1507.3	1543.5	914.72	985.95	850.98
26	584.1	1245.2	1075.2	1186.7	1173.2	722.84	567.44	1121.4	948.54	1600.7	1595.4	1634	971.03	1046.1	907.22
28	625.56	1318.2	1143.4	1255.5	1241.7	768.28	607.46	1188.3	1010.2	1692.5	1686.9	1728.2	1029.6	1108.8	965.94
30	668.87	1394.2	1214.6	1327	1313.1	815.53	649.27	1257.8	1074.6	1788	1782.2	1826.2	1090.6	1173.9	1027.2
32	714.1	1473.2	1288.8	1401.3	1387.2	864.64	692.9	1330	1141.7	1887.3	1881.3	1928.1	1153.9	1241.5	1091.1
34	761.3	1555.1	1366.1	1478.5	1464.2	915.65	738.4	1405.1	1211.8	1990.5	1984.2	2034	1219.6	1311.8	1157.7
36	810.52	1640.2	1446.7	1558.7	1544.2	968.61	785.83	1483	1284.8	2097.6	2091.1	2144.1	1287.9	1384.8	1227
38	861.83	1728.5	1530.6	1641.8	1627.2	1023.5	835.25	1563.9	1360.8	2208.9	2202.1	2258.3	1358.8	1460.5	1299.3
40	915.27	1820.1	1618	1728.1	1713.3	1080.5	886.7	1647.7	1440	2324.3	2317.4	2377	1432.3	1539.1	1374.4
42	970.9	1915	1708.8	1817.6	1802.7	1139.6	940.25	1734.7	1522.4	2444.1	2437	2500.1	1508.4	1620.5	1452.7
44	1028.8	2013.3	1803.3	1910.3	1895.4	1200.7	995.94	1824.8	1608.2	2568.4	2561	2627.8	1587.4	1704.9	1534
46	1089	2115.2	1901.6	2006.5	1991.5	1264.1	1053.8	1918.1	1697.3	2697.2	2689.7	2760.3	1669.1	1792.3	1618.5
48	1151.6	2220.6	2003.8	2106.1	2091.1	1329.6	1114	2014.7	1790.1	2830.8	2823.2	2897.6	1753.8	1882.8	1706.4
50	1216.6	2329.7	2109.9	2209.3	2194.4	1397.4	1176.5	2114.7	1886.4	2969.2	2961.5	3039.9	1841.4	1976.4	1797.7
52	1284.1	2442.5	2220.2	2316.2	2301.4	1467.5	1241.3	2218.1	1986.6	3112.7	3104.9	3187.4	1932	2073.3	1892.5
54	1354.2	2559.2	2334.7	2427	2412.3	1540	1308.6	2325.1	2090.6	3261.4	3253.6	3340.1	2025.7	2173.5	1990.9
56	1426.9	2679.8	2453.7	2541.7	2527.2	1614.8	1378.5	2435.6	2198.7	3415.4	3407.7	3498.4	2122.6	2277.2	2093.2
58	1502.3	2804.5	2577.3	2660.5	2646.3	1692.1	1450.8	2549.9	2310.9	3575.1	3567.4	3662.2	2222.7	2384.2	2199.3
60	1580.5	2933.2	2705.6	2783.5	2769.7	1771.9	1525.9	2667.9	2427.4	3740.5	3733	3831.9	2326.2	2494.9	2309.4

MFW TRADE WAREHOUSE

Temp (°C)	R507	R744	R717	SP34E		R600A	R290
		CO2	NH3	Bubble	Dew	ISO-Butane	Propane
-50	-14.949	581.02	-60.489	-60.686	-68.08	-84.528	-30.756
-48	-5.9972	638.17	-55.414	-56.175	-64.045	-82.545	-23.766
-46	3.6694	698.83	-49.83	-51.264	-59.623	-80.376	-16.243
-44	14.09	763.12	-43.699	-45.928	-54.787	-78.008	-8.1608
-42	25.303	831.19	-36.98	-40.139	-49.508	-75.428	0.50954
-40	37.35	903.17	-29.633	-33.872	-43.759	-72.623	9.7962
-38	50.272	979.19	-21.614	-27.096	-37.51	-69.577	19.728
-36	64.111	1059.4	-12.878	-19.784	-30.731	-66.278	30.335
-34	78.911	1143.9	-3.3793	-11.905	-23.39	-62.709	41.646
-32	94.715	1232.9	6.9313	-3.4284	-15.455	-58.856	53.693
-30	111.57	1326.4	18.103	5.6776	-6.8929	-54.703	66.507
-28	129.52	1424.7	30.189	15.445	2.3301	-50.233	80.119
-26	148.61	1527.9	43.241	25.908	12.249	-45.43	94.561
-24	168.88	1636.2	57.314	37.101	22.899	-40.276	109.87
-22	190.4	1749.6	72.466	49.057	34.317	-34.755	126.06
-20	213.2	1868.3	88.754	61.813	46.539	-28.848	143.19
-18	237.33	1992.5	106.24	75.406	59.605	-22.537	161.28
-16	262.84	2122.4	124.98	89.871	73.551	-15.803	180.37
-14	289.8	2258	145.04	105.25	88.419	-8.6279	200.49
-12	318.23	2399.6	166.49	121.57	104.25	-0.99178	221.67
-10	348.21	2547.4	189.39	138.89	121.08	7.125	243.95
-8	379.78	2701.4	213.81	157.23	138.95	15.742	267.37
-6	412.99	2861.8	239.81	176.65	157.91	24.881	291.97
-4	447.91	3028.9	267.47	197.17	177.99	34.561	317.76
-2	484.58	3202.9	296.87	218.85	199.24	44.804	344.81
0	523.06	3383.8	328.06	241.72	221.71	55.631	373.13
2	563.41	3572	361.13	265.83	245.44	67.063	402.77
4	605.69	3767.5	396.16	291.23	270.47	79.123	433.77
6	649.95	3970.7	433.21	317.95	296.85	91.833	466.16
8	696.26	4181.7	472.37	346.04	324.63	105.21	499.99
10	744.67	4400.9	513.72	375.55	353.84	119.29	535.28
12	795.25	4628.3	557.34	406.52	384.55	134.08	572.08
14	848.06	4864.4	603.31	439.01	416.79	149.62	610.42
16	903.16	5109.5	651.71	473.05	450.62	165.91	650.35
18	960.62	5363.8	702.63	508.7	486.08	183	691.91
20	1020.5	5627.7	756.15	546	523.22	200.9	735.14
22	1082.9	5901.8	812.36	585.01	562.1	219.63	780.07
24	1147.8	6186.4	871.35	625.78	602.76	239.22	826.74
26	1215.4	6482.4	933.21	668.35	645.26	259.69	875.21
28	1285.6	6790.5	998.02	712.78	689.64	281.08	925.5
30	1358.7	7112.4	1065.9	759.12	735.96	303.4	977.67
32	1434.6	*critical temp 31°C	1136.9	807.43	784.28	326.67	1031.8
34	1513.4		1211.1	857.75	834.64	350.94	1087.8
36	1595.2		1288.6	910.14	887.11	376.21	1145.8
38	1680.2		1369.6	964.67	941.73	402.51	1205.9
40	1768.3		1454.1	1021.4	998.57	429.88	1268.1
42	1859.7		1542.2	1080.3	1057.7	458.34	1332.4
44	1954.4		1634	1141.6	1119.1	487.91	1398.9
46	2052.6		1729.6	1205.2	1183	518.62	1467.6
48	2154.4		1829.2	1271.2	1249.2	550.5	1538.6
50	2259.9		1932.7	1339.8	1318	583.57	1612
52	2369.2		2040.4	1410.9	1389.4	617.87	1687.7
54	2482.4		2152.3	1484.6	1463.4	653.42	1765.8
56	2599.7		2268.5	1560.9	1540.2	690.24	1846.5
58	2721.3		2389.1	1640.1	1619.7	728.37	1929.7
60	2847.3		2514.3	1722	1702.1	767.84	2015.4

CONVERSION FACTORS

Heat Flow

Btu/hr x 0.252 = kcal/hr
Btu/hr x 0.293 = watts
watts x 0.86 = kcal/hr
watts x 3.4129 = Btu/hr
watts x 0.000284 = ton (refr)
watts x 0.00133 = HP
kcal/hr x 1.163 = watts
kcal/hr x 3.97 = Bru/hr
HP x 746 = watts
ton (refr) x 3517 = watts

Temperature

°C = (°F - 32) ÷ 1.8
°F = (°C x 1.8) + 32

Pressure

kPa ÷ 6.89 = psi
inch Hg x 3.39 = kPa
inch H2O x 0.249 = kPa
mm Hg (1 torr) x 0.133 = kPa

Volume

ft3 x 0.02832 = m3

Volume Flow

cfm x 0.472 = l/s
fpm x 0.00508 = m/s
imp. gal/min x 0.0758 = l/s
U.S. gal/min x 0.0631 = l/s

Velocity

fps x 0.3048 = m/s
fpm x 0.00508 = m/s

Please note

This chart is intended as a guide only

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