NATIONAL® 454A

DIFLUOROMETHANE
2,3,3,3 - TETRAFLUOROPROPENE

BENEFITS / FEATURES

- **Lower GWP:** 94% lower GWP compared to common alternatives
- **High Performance:** Delivers enhanced cooling capacity over R-404A
- **Energy Efficient:** Superior efficiency over R-410A
- **User-Friendly:** Low-temperature glide simplifies maintenance
- **Durable:** Designed for reliable performance in high temperatures

PRIMARY USES

National 454A (R-454A) is the ideal replacement for R-410A, offering superior energy efficiency and eco-friendliness.

Applications:

- Chillers
- Commercial Ice Machines
- Remote Condensing Units
- Supermarket Refrigeration Systems
- Cold Storage Warehouses
- Industrial Cooling & Refrigeration
- Residential Dehumidifiers

AVAILABLE SIZES

Cylinder	25 lb
Cylinder	100 lb
Cylinder	850 lb
Cylinder	1400 lb

HFC-HFO REFRIGERANT

Replaces: R-404A

Compatible Oil(s): Polyolester Oil (POE)

Retrofitting with R454A is strictly prohibited.

Physical Properties of Refrigerants	National R-454A
Refrigerant Classification	HFC-HFO
Molecular Weight (lb/lbmol)	80.468
Boiling Point (1atm,˚F)	-54.94
Critical Pressure (psia)	671.14
Critical Temperature (˚F)	179.09
Critical Density (lb./ft^3)	28.48
Liquid Density (70˚F, lb./ft^3)	63.731
Vapor Density (70˚Fbp.lb./ft^3)	3.0033
Heat of Vaporization (bp, BTU/lb.)	124.0684
Specific Heat Liquid (70˚F, BTU/lb.˚F)	0.38769
Specific Heat Vapor (1atm, 70˚F, BTU/lb.˚F)	0.21135
Ozone Depletion Potential (CFC11 = 1.0)	0
Global Warming Potential (CO_2 = 1.0)	236
ASHRAE Standard 34 Safety Rating	A2L
Temperature Glide (˚F)	**9**

PRESSURE-TEMPERATURE CHART

	National R-454A	
TEMP (˚F)	**Liquid (psig)**	**Vapor (psig)**
-20	19.3	12.1
-10	27.6	19.0
0	37.4	27.3
5	42.9	32.0
10	48.8	37.0
15	55.2	42.5
20	62.0	48.4
25	69.3	54.8
30	77.2	61.7
35	85.6	69.0
40	94.5	76.9
45	104	85.3
50	114	94.3
55	124	104
60	136	114
65	148	125
70	161	136
75	174	149
80	188	162
85	203	175
90	219	190
95	236	206
100	253	222
105	272	239
110	291	257
115	311	277
120	332	297
125	354	318
130	377	341
135	402	365
140	427	390

Values from NIST Refprop 10.0

* Represented in Hg

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NATIONAL®

National R-454A Thermal Dynamic Properties

454A

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Temp (˚F)	Pressure		Density		Enthalpy		Entropy	
	Liquid (psia)	Vapor (psia)	Liquid (lb/ft^3)	Vapor (lb/ft^3)	Liquid (BTU/lb)	Vapor (BTU/lb)	Liquid (BTU/lb-*R)	Vapor (BTU/lb-*R)
-55	14.3	10.7	79.1	0.20	-4.8086	101.99	-0.011	0.256
-50	16.4	12.4	78.6	0.23	-3.2124	102.71	-0.007	0.254
-45	18.6	14.2	78.1	0.26	-1.6097	103.44	-0.003	0.253
-40	21.1	16.2	77.6	0.30	0	104.16	0	0.251
-35	23.9	18.5	77.1	0.34	1.6172	104.87	0.003	0.250
-30	27.0	21.0	76.6	0.38	3.2423	105.58	0.007	0.249
-25	30.3	23.8	76.1	0.43	4.8758	106.28	0.011	0.248
-20	34.0	26.8	75.6	0.48	6.518	106.97	0.015	0.246
-15	37.9	30.1	75.1	0.54	8.1694	107.66	0.018	0.245
-10	42.3	33.7	74.5	0.60	9.8305	108.34	0.022	0.244
-5	47.0	37.7	74.0	0.67	11.502	109.01	0.026	0.243
0	52.1	42.0	73.4	0.75	14.876	109.68	0.029	0.242
5	57.6	46.7	72.9	0.83	14.876	110.33	0.033	0.241
10	63.5	51.7	72.3	0.91	16.58	110.97	0.037	0.240
15	69.8	57.2	71.7	1.01	18.295	111.61	0.040	0.239
20	76.7	63.1	71.1	1.11	20.023	112.23	0.044	0.239
25	84.0	69.5	70.5	1.22	21.764	112.84	0.047	0.238
30	91.9	76.4	69.9	1.34	23.518	113.43	0.051	0.237
35	100	83.7	69.3	1.46	25.286	114.02	0.054	0.236
40	109	91.6	68.7	1.60	27.069	114.58	0.058	0.235
45	118.	100	68.1	1.75	28.866	115.13	0.061	0.235
50	128	109	67.4	1.91	30.68	115.67	0.065	0.234
55	139	118	66.8	2.08	32.51	116.18	0.069	0.233
60	151	128	66.1	2.26	34.358	116.68	0.072	0.232
65	163	139	65.4	2.46	36.223	117.15	0.076	0.232
70	175	151	64.7	2.67	38.108	117.6	0.079	0.231
75	189	163	64.0	2.90	40.014	118.03	0.083	0.230
80	203	176	63.2	3.15	41.941	118.43	0.086	0.229
85	218	190	62.5	3.41	43.891	118.79	0.090	0.229
90	234	205	61.7	3.70	45.866	119.13	0.093	0.228
95	251	220	60.9	4.01	47.868	119.43	0.097	0.227
100	268	237	60.0	4.35	49.899	119.7	0.100	0.226
105	286	254	59.2	4.71	51.961	119.92	0.104	0.225
110	306	272	58.3	5.11	54.059	120.1	0.107	0.224
115	326	291	57.3	5.54	56.196	120.22	0.111	0.224
120	347	312	56.4	6.01	58.377	120.29	0.115	0.223
125	369	333	55.3	6.52	60.607	120.28	0.118	0.221
130	392	356	54.2	7.09	62.892	120.21	0.122	0.220
135	416	380	53.1	7.72	65.243	120.04	0.126	0.219
140	442	405	51.9	8.42	67.669	119.77	0.130	0.218
145	468	431	50.5	9.22	70.187	119.38	0.134	0.216
150	495	459	49.1	10.1	72.817	118.83	0.138	0.214
155	524	489	47.4	11.1	75.593	118.09	0.142	0.212
160	554	520	45.6	12.4	78.565	117.08	0.147	0.210
165	584	553	43.5	13.9	81.824	115.68	0.152	0.207
170	616	589	40.8	15.9	85.565	113.67	0.158	0.203

One atmosphere = 14.696 psia
Reference point for enthalpy and entropy:
0.0 Btu/lb at -40°F
0.0 Btu/lb °R at -40°F

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