



# Solkane<sup>®</sup> 134a

Refrigerant



Solvay  
Fluor und Derivate



## Product Description

Substitute for R 12

- Solkane 134 a has similar thermodynamic properties as R 12
- Existing R 12 equipment can be retrofitted with Solkane 134 a
- Solkane 134 a is an established refrigerant
- Solkane 134 a is a non-flammable and safe to use
- Solkane 134 a is environmentally acceptable

## Applications

Solkane 134 a can replace R 12 in most applications.

- Household refrigerators
- Car air conditioning systems
- Heat pumps
- Chillers
- Transport refrigeration
- Commercial cooling

## Environmental Aspects

### ODP Ozone Depletion Potential

Solkane 134 a **0**

CFC 12 **1**

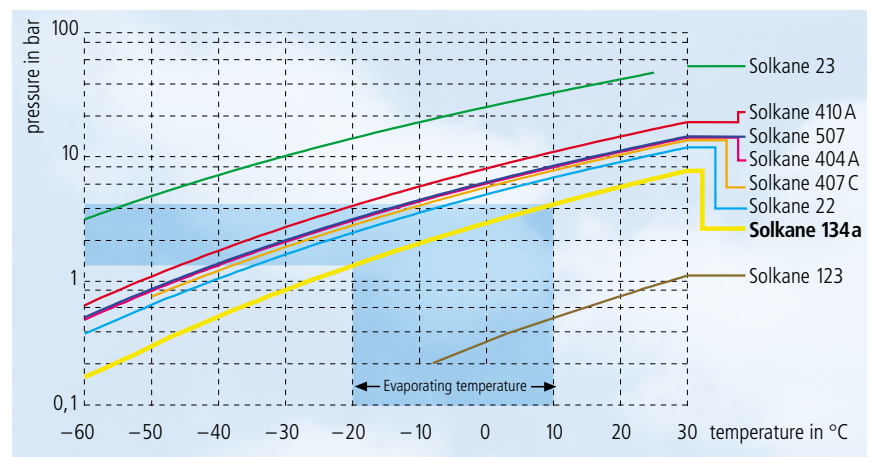
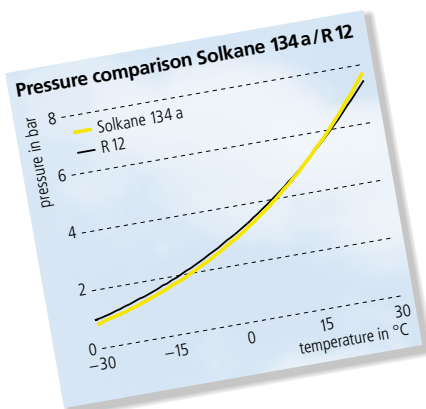
### HGWP\* Halocarbon Global Warming Potential

Solkane 134 a **0.3**

CFC 12 **3.0**

\*The HGWP is related to R11 for an infinitive time horizon.

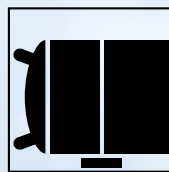
## Range of Application



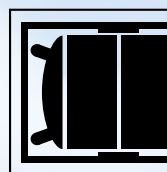
## Physical Properties

Chemical Name		1,1,1,2-Tetrafluoroethane
Chemical Formula		CF <sub>3</sub> -CH <sub>2</sub> F
Molecular Weight	kg/kmol	102.0
Boiling Point at 1.013 bar	°C	-26.1
Critical Temperature	°C	101.1
Critical Pressure	bar	40.6
Critical Density	kg/m <sup>3</sup>	515
Critical Volume	m <sup>3</sup> /kg	1.94 x 10 <sup>-3</sup>
Density Liquid <sup>1)</sup>	kg/m <sup>3</sup>	1208
Density Saturated Vapour <sup>1)</sup>	kg/m <sup>3</sup>	32.609
Heat of Vaporization <sup>1)</sup>	kJ/kg	175.5
Specific Heat Capacity <sup>1)</sup> (Liquid)	kJ/kgK	1.423
Specific Heat Capacity <sup>2)</sup> (Vapour)	kJ/kgK	0.876
<sup>1)</sup> at 25°C		
<sup>2)</sup> at 25°C and 1.013 bar		

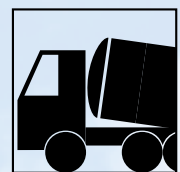
## Packaging



Returnable tanks  
(900 kg)



ISO Tank  
containers  
(approx. 17000 kg)



Road Tankers  
(20000 kg)

Other sizes of packaging are available from our wholesalers.

## Technical Service

For further information please contact our technical specialists:

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### Comments:

The recommendations for the use of Solkane-refrigerants are given to the best of our knowledge and information and are not binding.

All users are themselves responsible for the observance of the relevant legal regulations and existing copyright.

Under no circumstances do we accept liability for damages which arise from the use of Solkane refrigerants and such products, which are manufactured with Solkane refrigerants.

# Thermodynamic properties of saturated Solkane® 134a

Release 1.04

t °C	p bar	v' dm <sup>3</sup> /kg	v'' dm <sup>3</sup> /kg	rho' kg/dm <sup>3</sup>	rho'' kg/m <sup>3</sup>	h' kJ/kg	h'' kJ/kg	r kJ/kg	s' kJ/kgK	s'' kJ/kgK	t °C	p bar	v' dm <sup>3</sup> /kg	v'' dm <sup>3</sup> /kg	rho' kg/dm <sup>3</sup>	rho'' kg/m <sup>3</sup>	h' kJ/kg	h'' kJ/kg	r kJ/kg	s' kJ/kgK	s'' kJ/kgK
-50	0.29	0.693	607.09	1.443	1.65	135.75	366.14	230.39	0.7409	1.7748	30	7.70	0.841	26.44	1.189	37.82	241.83	412.71	170.87	1.1429	1.7074
-49	0.31	0.694	574.82	1.440	1.74	137.00	366.77	229.77	0.7463	1.7730	31	7.93	0.844	25.68	1.185	38.95	243.28	413.20	169.92	1.1476	1.7071
-48	0.33	0.696	544.61	1.437	1.84	138.24	367.40	229.15	0.7518	1.7712	32	8.15	0.847	24.94	1.181	40.10	244.72	413.69	168.97	1.1520	1.7069
-47	0.35	0.697	516.26	1.435	1.94	139.49	368.03	228.54	0.7572	1.7694	33	8.39	0.850	24.23	1.177	41.28	246.17	414.18	168.01	1.1573	1.7066
-46	0.37	0.698	489.66	1.432	2.04	140.73	368.65	227.92	0.7626	1.7677	34	8.63	0.853	23.54	1.173	42.49	247.63	414.66	167.04	1.1616	1.7063
-45	0.39	0.700	464.69	1.429	2.15	141.98	369.28	227.30	0.7681	1.7660	35	8.87	0.856	22.87	1.169	43.73	249.08	415.14	166.06	1.1663	1.7060
-44	0.41	0.701	441.25	1.426	2.27	143.23	369.91	226.68	0.7735	1.7644	36	9.12	0.859	22.22	1.164	45.00	250.55	415.62	165.07	1.1710	1.7057
-43	0.44	0.702	419.20	1.424	2.39	144.47	370.53	226.06	0.7789	1.7628	37	9.37	0.862	21.60	1.160	46.31	252.01	416.09	164.07	1.1757	1.7055
-42	0.46	0.704	398.46	1.421	2.51	145.72	371.16	225.44	0.7842	1.7612	38	9.63	0.865	20.99	1.156	47.64	253.48	416.55	163.07	1.1804	1.7052
-41	0.48	0.705	378.94	1.418	2.64	146.97	371.78	224.82	0.7896	1.7597	39	9.89	0.868	20.40	1.152	49.01	254.96	417.01	162.06	1.1850	1.7049
-40	0.51	0.707	360.57	1.415	2.77	148.21	372.41	224.20	0.7950	1.7582	40	10.16	0.871	19.83	1.148	50.42	256.44	417.47	161.03	1.1897	1.7046
-39	0.54	0.708	343.24	1.413	2.91	149.46	373.03	223.57	0.8003	1.7567	41	10.44	0.875	19.28	1.143	51.86	257.92	417.92	160.00	1.1944	1.7044
-38	0.57	0.709	326.91	1.410	3.06	150.71	373.66	222.94	0.8057	1.7553	42	10.72	0.878	18.75	1.139	53.34	259.41	418.37	158.96	1.1991	1.7041
-37	0.60	0.711	311.51	1.407	3.21	151.96	374.28	222.31	0.8110	1.7539	43	11.01	0.881	18.23	1.135	54.86	260.90	418.81	157.91	1.2038	1.7038
-36	0.63	0.712	296.98	1.404	3.37	153.22	374.90	221.68	0.8163	1.7525	44	11.30	0.885	17.73	1.130	56.41	262.40	419.25	156.84	1.2085	1.7035
-35	0.66	0.714	283.25	1.401	3.53	154.47	375.52	221.05	0.8217	1.7512	45	11.60	0.888	17.24	1.126	58.01	263.91	419.68	155.77	1.2132	1.7032
-34	0.69	0.715	270.28	1.399	3.70	155.73	376.14	220.41	0.8270	1.7499	46	11.90	0.892	16.77	1.121	59.64	265.42	420.11	154.69	1.2179	1.7030
-33	0.73	0.716	258.03	1.396	3.88	156.99	376.76	219.77	0.8322	1.7486	47	12.21	0.895	16.31	1.117	61.32	266.94	420.53	153.59	1.2226	1.7027
-32	0.77	0.718	246.44	1.393	4.06	158.25	377.38	219.13	0.8375	1.7473	48	12.53	0.899	15.86	1.112	63.04	268.46	420.94	152.48	1.2273	1.7024
-31	0.80	0.719	235.47	1.390	4.25	159.51	378.00	218.49	0.8428	1.7461	49	12.85	0.903	15.43	1.108	64.81	269.99	421.35	151.36	1.2320	1.7021
-30	0.84	0.721	225.08	1.387	4.44	160.78	378.61	217.84	0.8480	1.7449	50	13.18	0.907	15.01	1.103	66.63	271.53	421.75	150.22	1.2367	1.7018
-29	0.88	0.722	215.24	1.384	4.65	162.04	379.23	217.19	0.8533	1.7438	51	13.51	0.910	14.60	1.098	68.49	273.07	422.14	149.07	1.2415	1.7015
-28	0.93	0.724	205.92	1.382	4.86	163.31	379.85	216.53	0.8585	1.7426	52	13.85	0.914	14.20	1.094	70.40	274.62	422.53	147.91	1.2462	1.7011
-27	0.97	0.725	197.08	1.379	5.07	164.58	380.46	215.87	0.8637	1.7415	53	14.20	0.919	13.82	1.089	72.36	276.18	422.91	146.73	1.2510	1.7008
-26	1.02	0.727	188.70	1.376	5.30	165.86	381.07	215.21	0.8689	1.7404	54	14.55	0.923	13.44	1.084	74.38	277.75	423.28	145.53	1.2557	1.7005
-25	1.06	0.728	180.74	1.373	5.53	167.14	381.68	214.55	0.8741	1.7394	55	14.91	0.927	13.08	1.079	76.45	279.32	423.65	144.32	1.2605	1.7001
-24	1.11	0.730	173.19	1.370	5.77	168.42	382.29	213.88	0.8793	1.7383	56	15.28	0.931	12.73	1.074	78.58	280.91	424.00	143.10	1.2653	1.6998
-23	1.16	0.732	166.01	1.367	6.02	169.70	382.90	213.20	0.8845	1.7373	57	15.65	0.936	12.38	1.069	80.76	282.50	424.35	141.85	1.2701	1.6994
-22	1.22	0.733	159.20	1.364	6.28	170.98	383.51	212.53	0.8896	1.7363	58	16.03	0.940	12.05	1.064	83.01	284.10	424.69	140.59	1.2749	1.6990
-21	1.27	0.735	152.72	1.361	6.55	172.27	384.12	211.85	0.8948	1.7353	59	16.42	0.945	11.72	1.059	85.32	285.71	425.02	139.31	1.2797	1.6986
-20	1.33	0.736	146.55	1.358	6.82	173.56	384.72	211.16	0.8999	1.7344	60	16.82	0.949	11.40	1.053	87.70	287.34	425.34	138.01	1.2845	1.6982
-19	1.39	0.738	140.68	1.355	7.11	174.86	385.33	210.47	0.9050	1.7335	61	17.22	0.954	11.09	1.048	90.14	288.97	425.65	136.69	1.2894	1.6978
-18	1.45	0.740	135.10	1.352	7.40	176.15	385.93	209.78	0.9101	1.7326	62	17.63	0.959	10.79	1.043	92.66	290.61	425.95	135.34	1.2942	1.6974
-17	1.51	0.741	129.78	1.349	7.71	177.45	386.53	209.08	0.9152	1.7317	63	18.04	0.964	10.50	1.037	95.25	292.26	426.24	133.98	1.2991	1.6969
-16	1.57	0.743	124.72	1.346	8.02	178.75	387.13	208.38	0.9203	1.7308	64	18.47	0.969	10.21	1.032	97.92	293.93	426.52	132.59	1.3040	1.6964
-15	1.64	0.745	119.89	1.343	8.34	180.06	387.73	207.67	0.9254	1.7300	65	18.90	0.975	9.93	1.026	100.67	295.61	426.79	131.18	1.3089	1.6959
-14	1.71	0.746	115.28	1.340	8.67	181.37	388.33	206.96	0.9304	1.7292	66	19.34	0.980	9.66	1.020	103.50	297.30	427.04	129.74	1.3138	1.6954
-13	1.78	0.748	110.89	1.337	9.02	182.68	388.93	206.25	0.9355	1.7284	67	19.78	0.986	9.40	1.014	106.42	299.00	427.28	128.28	1.3188	1.6949
-12	1.85	0.750	106.70	1.334	9.37	183.99	389.52	205.53	0.9405	1.7276	68	20.24	0.992	9.14	1.009	109.44	300.72	427.51	126.79	1.3237	1.6943
-11	1.93	0.752	102.70	1.331	9.74	185.31	390.11	204.80	0.9455	1.7268	69	20.70	0.997	8.89	1.003	112.55	302.45	427.72	125.27	1.3287	1.6937
-10	2.01	0.753	98.88	1.328	10.11	186.63	390.71	204.07	0.9505	1.7261	70	21.17	1.004	8.64	0.996	115.76	304.19	427.91	123.72	1.3337	1.6931
-9	2.09	0.755	95.23	1.324	10.50	187.96	391.30	203.34	0.9555	1.7254	71	21.65	1.010	8.40	0.990	119.08	305.95	428.09	122.14	1.3387	1.6924
-8	2.17	0.757	91.75	1.321	10.90	189.28	391.89	202.60	0.9605	1.7247	72	22.13	1.016	8.16	0.984	122.52	307.73	428.26	120.53	1.3438	1.6917
-7	2.26	0.759	88.41	1.318	11.31	190.61	392.47	201.86	0.9655	1.7240	73	22.63	1.023	7.93	0.977	126.07	309.52	428.40	118.88	1.3489	1.6910
-6	2.34	0.760	85.22	1.315	11.73	191.94	393.06	201.11	0.9705	1.7233	74	23.13	1.030	7.71	0.971	129.75	311.33	428.52	117.20	1.3539	1.6902
-5	2.43	0.762	82.17	1.312	12.17	193.28	393.64	200.36	0.9754	1.7227	75	23.64	1.037	7.49	0.964	133.57	313.15	428.63	115.47	1.3590	1.6894
-4	2.53	0.764	79.25	1.309	12.62	194.62	394.22	199.61	0.9804	1.7220	76	24.16	1.045	7.27	0.957	137.53	315.00	428.71	113.71	1.3642	1.6885
-3	2.62	0.766	76.46	1.305	13.08	195.96	394.80	198.85	0.9853	1.7214	77	24.69	1.052	7.06	0.950	141.64	316.86	428.77	111.91	1.3693	1.6876
-2	2.72	0.768	73.78	1.302	13.55	197.30	395.38	198.08	0.9902	1.7208	78	25.23	1.060	6.85	0.943	145.91	318.74	428.80	110.06	1.3745	1.6866
-1	2.82	0.770	71.22	1.299	14.04	198.65	395.96	197.31	0.9951	1.7202	79	25.78	1.069	6.65	0.936	150.35	320.64	428.81	108.16	1.3797	1.6856
0	2.93	0.772	68.76	1.296	14.54	200.00	396.53	196.53	1.0000	1.7196	80	26.33	1.078	6.45	0.928	154.99	322.57	428.78	106.22	1.3850	1.6845
1	3.04	0.774	66.40	1.292	15.06	201.35	397.11	195.75	1.0049	1.7191	81	26.90	1.087	6.26	0.920	159.82	324.51	428.73	104.22	1.3903	1.6833
2																					