

## R-600a

Isobuane C<sub>4</sub>H<sub>10</sub>

Masse molaire en g/mol .....	58,12
Température de fusion en °C .....	-159,38
Point d'ébullition (sous 1,013 bar) .....	-11,76
Glissement de température sous 1,013 bar en K .....	0
Température critique en °C .....	134,7
Pression critique en bar absolu .....	36,29
Chaleur massique du liquide à + 25°C en kJ/kg.K .....	2,430
Chaleur massique de la vapeur (sous 1,013 bar) à + 25°C en kJ/kg.K .....	1,692
Rapport des capacités thermiques massiques (Cp/Cv) à + 25°C et sous 1,013 bar .....	1,105
Viscosité du liquide à + 25°C en centipoise (10 <sup>-3</sup> Pa.s) .....	0,151
Tension de surface à + 25°C en dyne par centimètre (10 <sup>-3</sup> N/m) .....	10,00
Classification NF-EN 378 .....	A3
GWP (IPCC 4) .....	3

### ◆ Principales applications

L'isobutane (R-600a) de très haute pureté est un hydrocarbure (HC) utilisé comme fluide frigorigène.

### ◆ Spécifications commerciales

Isobutane : ≥ 99,5 % volume.

Propane : ≤ 0,40 % volume.

n-butane : ≤ 0,25 % volume.

Insaturés C4 : ≤ 0,01 % volume.

Inodore.

Teneur en eau : ≤ 12 ppm poids.

### ◆ Huiles

Utiliser une huile minérale (MN), alkylbenzène (AB) ou polyalphaoléfine (PAO).

Vérifier auprès de **Climalife** la viscosité de l'huile retenue en fonction de l'application et la miscibilité avec le fluide considéré.

### ◆ Réglementation

Le R-600a est un produit classé extrêmement inflammable (A3).

Se reporter à l'arrêté du 14 février 2000 (ERP) paru au J.O du 21 mars 2000.

(Se reporter à la réglementation en vigueur du pays concerné).

## Caractéristiques thermodynamiques du R-600a - État saturé

Pression absolue P v	LIQUIDE					VAPEUR					Chaleur latente Lv
	Temp. bulle t°	Vol. mass v°	Masse vol. ρ°	Enthalpie h°	Entropie s°	Temp. rosée t°	Vol. mass v°	Masse vol. ρ°	Enthalpie h°	Entropie s°	
(Bar)	(°C)	(dm <sup>3</sup> /kg)	(kg/dm <sup>3</sup> )	(kJ/kg)	(kJ/kg·K)	(°C)	(m <sup>3</sup> /kg)	(kg/m <sup>3</sup> )	(kJ/kg)	(kJ/kg·K)	(kJ/kg)
0.004	-100	1,462	0,684	-6,395	0,067	-100,0	65,234	0,015	428,190	2,577	434,585
0.006	-95	1,473	0,679	3,036	0,121	-95,0	41,078	0,024	433,861	2,539	430,825
0.010	-90	1,483	0,674	12,549	0,173	-90,0	26,648	0,038	439,620	2,505	427,072
0.015	-85	1,494	0,669	22,144	0,225	-85,0	17,764	0,056	445,465	2,475	423,321
0.023	-80	1,505	0,664	31,823	0,276	-80,0	12,140	0,082	451,392	2,448	419,569
0.033	-75	1,516	0,660	41,587	0,326	-75,0	8,487	0,118	457,397	2,424	415,810
0.048	-70	1,528	0,655	51,439	0,375	-70,0	6,059	0,165	463,479	2,403	412,040
0.067	-65	1,539	0,650	61,380	0,423	-65,0	4,410	0,227	469,633	2,385	408,253
0.093	-60	1,551	0,645	71,413	0,471	-60,0	3,266	0,306	475,855	2,368	404,442
0.126	-55	1,564	0,640	81,540	0,518	-55,0	2,459	0,407	482,142	2,354	400,602
0.168	-50	1,576	0,634	91,764	0,564	-50,0	1,879	0,532	488,489	2,342	396,726
0.221	-45	1,589	0,629	102,086	0,610	-45,0	1,456	0,687	494,893	2,331	392,807
0.287	-40	1,602	0,624	112,512	0,655	-40,0	1,143	0,875	501,349	2,323	388,837
0.368	-35	1,616	0,619	123,042	0,700	-35,0	0,907	1,102	507,853	2,315	384,811
0.466	-30	1,630	0,614	133,682	0,744	-30,0	0,728	1,373	514,400	2,309	380,719
0.584	-25	1,644	0,608	144,433	0,787	-25,0	0,591	1,693	520,987	2,305	376,554
0.725	-20	1,659	0,603	155,300	0,831	-20,0	0,483	2,069	527,607	2,301	372,307
0.891	-15	1,674	0,597	166,286	0,874	-15,0	0,399	2,506	534,257	2,299	367,972
1.013	-11,76	1,684	0,594	173,481	0,901	-11,76	0,354	2,826	538,587	2,298	365,106
1.085	-10	1,690	0,592	177,395	0,916	-10,0	0,332	3,012	540,933	2,297	363,537
1.310	-5	1,706	0,586	188,632	0,958	-5,0	0,278	3,593	547,628	2,297	358,996
1.570	0	1,722	0,581	200,000	1,000	0,0	0,235	4,257	554,337	2,297	354,337
1.867	5	1,740	0,575	211,504	1,042	5,0	0,200	5,012	561,056	2,298	349,552
2.206	10	1,758	0,569	223,149	1,083	10,0	0,170	5,867	567,778	2,300	344,629
2.590	15	1,776	0,563	234,940	1,124	15,0	0,146	6,831	574,497	2,302	339,558
3.022	20	1,796	0,557	246,881	1,165	20,0	0,126	7,913	581,207	2,305	334,326
3.507	25	1,816	0,551	258,980	1,205	25,0	0,110	9,126	587,901	2,309	328,921
4.047	30	1,837	0,544	271,241	1,246	30,0	0,095	10,480	594,570	2,312	323,329
4.648	35	1,859	0,538	283,672	1,286	35,0	0,083	11,988	601,207	2,317	317,535
5.312	40	1,883	0,531	296,280	1,326	40,0	0,073	13,666	607,802	2,321	311,522
6.044	45	1,907	0,524	309,073	1,366	45,0	0,064	15,529	614,344	2,326	305,271
6.849	50	1,933	0,517	322,060	1,406	50,0	0,057	17,595	620,823	2,331	298,763
7.730	55	1,960	0,510	335,251	1,446	55,0	0,050	19,886	627,223	2,336	291,972
8.692	60	1,989	0,503	348,657	1,486	60,0	0,045	22,426	633,528	2,341	284,872
9.739	65	2,020	0,495	362,291	1,526	65,0	0,040	25,242	639,718	2,347	277,427
10.875	70	2,053	0,487	376,169	1,566	70,0	0,035	28,369	645,766	2,352	269,597
12,107	75	2,089	0,479	390,309	1,607	75,0	0,031	31,846	651,643	2,357	261,334
13,438	80	2,128	0,470	404,732	1,647	80,0	0,028	35,721	657,313	2,362	252,582
14,874	85	2,170	0,461	419,464	1,687	85,0	0,025	40,057	662,735	2,367	243,270
16,420	90	2,217	0,451	434,540	1,728	90,0	0,022	44,927	667,857	2,371	233,318
18,081	95	2,269	0,441	450,001	1,770	95,0	0,020	50,430	672,618	2,374	222,618
19,865	100	2,328	0,430	465,904	1,811	100,0	0,018	56,697	676,937	2,377	211,032
21,778	105	2,395	0,418	482,329	1,854	105,0	0,016	63,910	680,699	2,378	198,370
23,826	110	2,473	0,404	499,389	1,897	110,0	0,014	72,331	683,741	2,379	184,352
26,019	115	2,568	0,389	517,263	1,942	115,0	0,012	82,372	685,808	2,377	168,544
28,366	120	2,688	0,372	536,259	1,989	120,0	0,011	94,741	686,459	2,371	150,200
30,880	125	2,852	0,351	557,006	2,040	125,0	0,009	110,866	684,814	2,361	127,808
33,578	130	3,115	0,321	581,255	2,099	130,0	0,007	134,723	678,439	2,340	97,184

## Caractéristiques thermodynamiques du R-600a - État vapeur surchauffée - Volume massique (dm³/kg)

Tempér. à satur. °C	Pression rosée bar	Surchauffe (°C)																				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
-100	0,004	65234,428	67122,092	69009,465	70896,587	72783,489	74670,201	76556,744	78443,140	80329,405	82215,554	84101,600	85987,555	87873,427	89759,228	91644,958	93530,630	95416,247	97301,816	99187,340	101072,823	102958,268
-95	0,006	41078,104	42234,525	43390,584	44546,643	45702,400	46857,988	48013,429	49168,739	50323,934	51479,025	52634,020	53789,940	54945,783	56099,559	57252,276	58407,937	59562,550	60717,118	61871,645	63026,135	64180,590
-90	0,010	26648,454	27379,127	28109,691	28839,841	29569,933	30299,876	31029,689	31759,385	32488,978	33218,478	33947,896	34677,240	35406,518	36135,735	36864,898	37594,011	38323,080	39052,108	39781,098	40510,055	41238,980
-85	0,015	17639,727	18238,918	18733,666	19188,244	19662,673	20136,970	20611,151	21085,228	21559,213	22033,114	22507,040	22980,903	23454,704	23928,505	24402,346	24876,199	25350,070	25823,892	26297,690	26771,490	27245,290
-80	0,023	12139,727	12456,595	12732,292	13009,839	13406,253	13722,550	14038,743	14354,844	14670,861	14986,803	15302,679	15618,494	15934,255	16249,966	16565,632	16881,257	17196,845	17512,398	17827,920	18143,413	18458,880
-75	0,033	8487,367	8703,915	8920,312	9136,575	9352,720	9568,761	9784,708	10000,571	10216,360	10432,081	10647,742	10863,344	11078,904	11294,415	11509,884	11725,317	11940,715	12156,081	12371,414	12586,730	12802,017
-70	0,048	6059,201	6210,515	6361,694	6512,753	6663,707	6814,566	6965,342	7116,044	7266,674	7417,245	7567,761	7718,227	7868,644	8019,028	8169,370	8319,677	8469,953	8620,200	8770,420	8920,616	9070,789
-65	0,067	4409,577	4517,506	4625,314	4733,014	4840,620	4948,140	5055,585	5162,961	5270,276	5377,535	5484,744	5591,907	5699,029	5806,113	5913,163	6020,180	6127,169	6234,131	6341,068	6447,993	6554,874
-60	0,093	3266,233	3344,701	3423,059	3501,321	3579,497	3657,596	3735,626	3813,591	3891,504	3969,367	4047,182	4124,956	4202,691	4280,392	4358,060	4435,699	4513,314	4590,900	4668,467	4746,020	4823,533
-55	0,126	2458,999	2512,080	2575,032	2632,917	2690,724	2748,460	2806,134	2863,751	2921,317	2978,836	3036,313	3093,752	3151,155	3208,527	3265,869	3323,183	3380,474	3437,741	3494,987	3552,213	3609,421
-50	0,168	1879,188	1922,862	1976,496	2030,100	2083,683	2137,245	2190,786	2244,305	2297,802	2351,276	2404,725	2458,151	2511,559	2564,944	2618,307	2671,649	2724,970	2778,271	2831,552	2884,813	2938,054
-45	0,221	1456,068	1489,554	1522,762	1555,996	1589,164	1622,273	1655,330	1688,338	1721,303	1754,229	1787,119	1819,976	1852,803	1885,603	1918,377	1951,128	1983,857	2016,567	2049,258	2081,932	2114,590
-40	0,287	1142,688	1168,573	1194,384	1220,127	1245,810	1271,443	1297,019	1322,545	1348,020	1373,450	1398,836	1424,313	1449,699	1475,030	1500,359	1525,655	1550,932	1576,190	1601,431	1626,655	1651,865
-35	0,368	907,371	927,714	947,987	968,198	988,354	1008,460	1028,521	1048,540	1068,522	1088,471	1108,388	1128,277	1148,140	1167,979	1187,796	1207,592	1227,370	1247,131	1266,875	1286,604	1306,319
-30	0,466	728,391	744,583	760,711	776,781	792,800	808,772	824,702	840,596	856,450	872,276	888,072	903,842	919,587	935,311	951,013	966,697	982,362	998,012	1013,646	1029,266	1044,873
-25	0,584	590,623	603,667	616,651	629,581	642,463	655,302	668,101	680,864	693,596	706,297	718,971	731,621	744,248	756,853	769,440	782,008	794,560	807,096	819,618	832,126	844,623
-20	0,725	483,386	494,013	504,585	515,106	525,581	536,016	546,414	556,779	567,113	577,419	587,700	597,958	608,194	618,410	628,608	638,789	648,954	659,105	669,242	679,366	689,479
-15	0,891	399,037	407,789	416,488	425,139	433,748	442,319	450,855	459,359	467,834	476,284	484,709	493,112	501,495	509,859	518,206	526,537	534,853	543,156	551,445	559,723	567,989
-11,76	1,013	353,863	361,621	369,328	376,989	384,609	392,192	399,742	407,261	414,753	422,219	429,662	437,083	444,486	451,870	459,237	466,589	473,927	481,251	488,563	495,863	503,153
-10	1,085	332,039	339,320	346,551	353,736	360,882	367,991	375,067	382,113	389,133	396,127	403,099	410,049	416,981	423,895	430,792	437,674	444,543	451,398	458,241	465,073	471,894
-5	1,310	278,333	284,449	290,516	296,541	302,528	308,480	314,401	320,294	326,161	332,004	337,825	343,627	349,411	355,178	360,929	366,666	372,389	378,100	383,798	389,488	395,167
0	1,570	234,910	240,094	245,232	250,329	255,390	260,418	265,416	270,387	275,334	280,258	285,161	290,046	294,913	299,764	304,600	309,423	314,232	319,030	323,817	328,594	333,361
5	1,867	199,515	203,948	208,336	212,686	217,001	221,284	225,538	229,767	233,972	238,155	242,319	246,465	250,594	254,708	258,808	262,895	266,969	271,032	275,085	279,127	283,161
10	2,206	170,445	174,267	178,046	181,788	185,496	189,174	192,824	196,450	200,053	203,635	207,198	210,744	214,274	217,790	221,292	224,781	228,258	231,725	235,182	238,629	242,067
15	2,590	146,396	149,718	152,999	156,243	159,455	162,637	165,793	168,925	172,035	175,125	178,197	181,252	184,292	187,318	190,330	193,331	196,320	199,299	202,269	205,229	208,180
20	3,022	126,367	129,277	132,147	134,981	137,783	140,556	143,304	146,029	148,733	151,417	154,084	156,734	159,370	161,993	164,602	167,201	169,788	172,365	174,939	177,492	180,042
25	3,507	109,579	112,147	114,875	117,169	119,631	122,065	124,474	126,861	129,227	131,575	133,905	136,220	138,521	140,809	143,084	145,348	147,602	149,846	152,080	154,307	156,525
30	4,047	95,422	97,704	99,947	102,156	104,335	106,486	108,612	110,716	112,801	114,867	116,915	118,951	120,972	122,980	124,976	126,961	128,936	130,902	132,859	134,807	136,748
35	4,648	83,414	85,457	87,461	89,431	91,371	93,284	95,173	97,040	98,887	100,717	102,531	104,330	106,115	107,888	109,650	111,401	113,142	114,873	116,597	118,312	120,020
40	5,312	73,174	75,016	76,818	78,586	80,325	82,036	83,724	85,391	87,038	88,668	90,283	91,883	93,469	95,043	96,607	98,159	99,702	101,237	102,762	104,280	105,791
45	6,044	64,396	66,067	67,699	69,296	70,863	72,404	73,922	75,418	76,895	78,356	79,801	81,231	82,649	84,054	85,449	86,833	88,208	89,574	90,932	92,283	93,627
50	6,849	56,833	58,360	59,846	61,298	62,720	64,115	65,487	66,838	68,171	69,486	70,786	72,072	73,345	74,606	75,857	77,097	78,328	79,551	80,766	81,974	83,174
55	7,730	50,286	51,690	53,053	54,381	55,678	56,949	58,196	59,423	60,631	61,822	62,997	64,159	65,308	66,445	67,572	68,689	69,797	70,897	71,999	73,074	74,152
60	8,692	44,592	45,891	47,149	48,371	49,562	50,726	51,866	52,986	54,086	55,170	56,238	57,293	58,335	59,366	60,386	61,396	62,398	63,391	64,373	65,356	66,328
65	9,739	39,616	40,829	41,997	43,128	44,228	45,300	46,348	47,374	48,382	49,373	50,348	51,310	52,260	53,198	54,125	55,043	55,953	56,854	57,748	58,635	59,516
70	10,875	35,250	36,389	37,481	38,535	39,556	40,549	41,517	42,463	43,390	44,300	45,195	46,076	46,945	47,803	48,650	49,488	50,317	51,138	51,952	52,759	53,559
75	12,107	31,402	32,480	33,509	34,497	35,450	36,374	37,272	38,149	39,006	39,846	40,670	41,481	42,279	43,066	43,843	44,611	45,370	46,121	46,864	47,602	48,332
80	13,438	27,994	29,024	30,000	30,932	31,827	32,692	33,530	34,345	35,141	35,919	36,682	37,431	38,167	38,892	39,608	40,314	41,011	41,701	42,383	43,059	43,728
85	14,874	24,965	25,957	26,890	27,774	28,620	29,432	30,218	30,980	31,722	32,446	33,155	33,849	34,529	35,203	35,863	36,515	37,158	37,794	38,422	39,044	39,659
90	16,420	22,258	23,225	24,123	24,968	25,770	26,539	27,278	27,994	28,688	29,365	30,026	30,672	31,307	31,930	32,542	33,146	33,741	34,329	34,909	35,483	36,051
95	18,081	19,829	20,781	21,623	22,465	23,231	23,961	24,661	25,335	25,988	26,623	27,241	27,846	28,437	29,018	29,588	30,149	30,701	31,246	31,784	32,315	32,841
100	19,865	17,638	18,587	19,430	20,226	20,962	21,658	22,323	22,962	23,578	24,175	24,756	25,323	25,877	26,419	26,951	27,474	27,989	28,496	28,995	29,489	29,976
105	21,778	15,647	16,608	17,452	18,218	18,928	19,596	20,230	20,837	21,421	21,985	22,532	23,065	23,585	24,094	24,592	25,081	25,561	26,034	26,500	26,960	27,413
110	23,826	13,825	14,816	15,638	16,410	17,100	17,743	18,351	18,929	19,484	20,019	20,537	21,039									

## Caractéristiques thermodynamiques du R-600a - État vapeur surchauffée - Enthalpie (kJ/kg)

Tempér. à satur., °C	Pression rosée bar	Surchauffe (°C)																				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
-100	0,004	428,190	433,892	439,693	445,591	451,588	457,684	463,879	470,174	476,570	483,067	489,667	496,371	503,179	510,092	517,112	524,240	531,477	538,823	546,280	553,848	561,529
-95	0,006	433,861	439,664	445,565	451,563	457,661	463,857	470,154	476,551	483,049	489,650	496,355	503,163	510,078	517,099	524,227	531,464	538,811	546,268	553,836	561,519	569,314
-90	0,010	439,820	445,624	451,526	457,626	463,825	470,123	476,522	483,022	489,625	496,331	503,141	510,056	517,078	524,208	531,446	538,793	546,252	553,821	561,504	569,299	577,209
-85	0,015	445,465	451,471	457,574	463,777	470,078	476,480	482,982	489,587	496,295	503,107	510,024	517,048	524,179	531,418	538,767	546,227	553,796	561,481	569,278	577,188	585,214
-80	0,023	451,392	457,501	463,708	470,014	476,419	482,926	489,534	496,245	503,059	509,979	517,005	524,138	531,379	538,730	546,191	553,764	561,449	569,247	577,159	585,185	593,327
-75	0,033	457,397	463,611	469,923	476,335	482,846	489,459	496,174	502,992	509,916	516,945	524,081	531,325	538,678	546,142	553,717	561,403	569,203	577,117	585,145	593,289	601,549
-70	0,048	463,479	469,800	476,218	482,737	489,356	496,077	502,901	509,829	516,964	524,003	531,251	538,607	546,074	553,652	561,341	569,144	577,060	585,091	593,237	601,498	609,876
-65	0,067	469,633	476,062	482,590	489,218	495,946	502,777	509,712	516,752	523,897	531,150	538,512	545,983	553,565	561,258	569,064	576,984	585,018	593,166	601,431	609,810	618,309
-60	0,093	475,855	482,395	489,035	495,774	502,614	509,558	516,605	523,758	531,018	538,386	545,863	553,450	561,149	568,959	576,883	584,921	593,074	601,341	609,725	618,226	626,844
-55	0,126	482,142	488,796	495,549	502,402	509,357	516,415	523,578	530,846	538,222	545,707	553,301	561,006	568,823	576,752	584,796	592,953	601,226	609,614	618,119	626,740	635,479
-50	0,168	488,489	495,260	502,129	509,099	516,171	523,346	530,626	538,013	545,507	553,110	560,824	568,648	576,585	584,635	592,799	601,078	609,472	617,982	626,608	635,351	644,212
-45	0,221	494,893	501,783	508,772	515,861	523,052	530,347	537,747	545,254	552,869	560,593	568,428	576,374	584,433	592,605	600,891	609,292	617,809	626,441	635,191	644,057	653,040
-40	0,287	501,349	508,362	515,473	522,685	529,999	537,416	544,938	552,568	560,306	568,153	576,111	584,180	592,362	600,658	609,068	617,593	626,234	634,990	643,863	652,853	661,960
-35	0,368	507,853	514,992	522,229	529,566	537,005	544,548	552,196	559,950	567,813	575,785	583,869	592,063	600,371	608,792	617,328	625,978	634,744	643,625	652,624	661,738	670,970
-30	0,466	514,400	521,670	529,036	536,502	544,069	551,739	559,515	567,397	575,383	583,488	591,698	600,021	608,455	617,004	625,666	634,443	643,336	652,346	661,468	670,708	680,065
-25	0,584	520,987	528,390	535,899	543,487	551,186	558,987	566,894	574,906	583,027	591,257	599,597	608,048	616,612	625,289	634,080	642,985	652,006	661,141	670,393	679,760	689,243
-20	0,725	527,607	535,148	542,784	550,518	558,351	566,287	574,327	582,473	590,726	599,088	607,560	616,143	624,838	633,645	642,566	651,601	660,751	670,015	679,395	688,889	698,500
-15	0,891	534,257	541,941	549,717	557,590	565,562	573,635	581,812	590,094	598,482	606,979	615,585	624,301	633,129	642,069	651,121	660,288	669,568	678,962	688,471	698,094	70,783
-11,76	1,013	538,587	546,364	554,234	562,200	570,264	578,428	586,695	595,066	603,544	612,129	620,823	629,627	638,542	647,569	656,708	665,960	675,326	684,805	694,398	704,106	713,927
-10	1,085	540,933	548,762	556,684	564,700	572,814	581,028	589,344	597,765	606,291	614,924	623,667	632,519	641,481	650,555	659,742	669,040	678,452	687,978	697,617	707,370	717,237
-5	1,310	547,628	555,609	563,679	571,843	580,102	588,460	596,920	605,482	614,149	622,922	631,803	640,792	649,892	659,102	668,423	677,856	687,401	697,059	706,830	716,714	726,711
0	1,570	554,337	562,474	570,699	579,014	587,423	595,929	604,534	613,241	622,052	630,967	639,989	649,119	658,357	667,704	677,162	686,731	696,411	706,203	716,106	726,122	736,250
5	1,867	561,056	569,355	577,738	586,209	594,771	603,429	612,184	621,039	629,996	639,057	648,221	657,493	666,872	676,359	685,955	695,661	705,478	715,404	725,442	735,591	745,850
10	2,206	567,778	576,244	584,791	593,423	602,143	610,956	619,864	628,871	637,977	647,185	656,496	665,912	675,434	685,063	694,799	704,644	714,598	724,661	734,834	745,117	755,509
15	2,590	574,497	583,137	591,853	600,650	609,533	618,506	627,571	636,732	645,991	655,349	664,809	674,371	684,038	693,811	703,689	713,675	723,768	733,969	744,279	754,697	765,223
20	3,022	581,207	590,027	598,918	607,887	616,937	626,074	635,300	644,619	654,033	663,545	673,156	682,867	692,682	702,600	712,622	722,750	732,984	743,325	753,772	764,326	774,988
25	3,507	587,901	596,908	605,981	615,126	624,349	633,654	643,046	652,527	662,100	671,767	681,532	691,396	701,360	711,426	721,595	731,867	742,244	752,725	763,311	774,003	784,800
30	4,047	594,570	603,773	613,035	622,363	631,764	641,243	650,803	660,450	670,185	680,012	689,934	699,952	710,069	720,285	730,602	741,021	751,544	762,165	772,892	783,723	794,657
35	4,648	601,207	610,614	620,073	629,591	639,176	648,833	658,567	668,383	678,285	688,276	698,358	708,534	718,805	729,174	739,642	750,209	760,875	771,643	782,512	793,482	804,554
40	5,312	607,802	617,424	627,088	636,803	646,578	656,419	666,332	676,322	686,395	696,552	706,798	717,135	727,565	738,089	748,709	759,426	770,240	781,153	792,166	803,277	814,489
45	6,044	614,344	624,192	634,071	643,991	653,963	663,994	674,091	684,261	694,509	704,838	715,251	725,753	736,343	747,025	757,800	768,669	779,633	790,694	801,851	813,106	824,458
50	6,849	620,823	630,909	641,013	651,147	661,323	671,551	681,839	692,194	702,622	713,127	723,713	734,382	745,136	755,979	766,911	777,934	789,050	800,260	811,564	822,963	834,458
55	7,730	627,223	637,562	647,902	658,260	668,649	679,082	689,569	700,116	710,730	721,416	732,178	743,018	753,939	764,945	776,038	787,218	798,487	809,848	821,301	832,846	844,485
60	8,692	633,528	644,137	654,727	665,320	675,933	686,581	697,274	708,021	718,827	729,694	740,640	751,656	762,748	773,921	785,176	796,515	807,941	819,455	831,059	842,752	854,536
65	9,739	639,718	650,615	661,472	672,316	683,166	694,040	704,949	715,902	726,907	737,970	749,096	760,291	771,558	782,900	794,321	805,823	817,408	829,077	840,831	852,676	864,608
70	10,875	645,766	656,976	668,124	679,236	690,338	701,450	712,584	723,752	734,962	746,223	757,539	768,913	780,363	791,879	803,469	815,136	826,883	838,711	850,621	862,616	874,697
75	12,107	651,643	663,204	674,665	686,067	697,439	708,802	720,173	731,564	742,987	754,451	765,964	777,531	789,159	800,853	812,616	824,452	836,363	848,351	860,419	872,568	884,800
80	13,438	657,313	669,267	681,077	692,796	704,457	716,087	727,706	739,330	750,974	762,649	774,363	786,125	797,942	809,818	821,758	833,765	844,844	855,996	867,228	878,529	891,913
85	14,874	662,735	675,141	687,343	699,407	711,379	723,292	735,173	747,042	758,916	770,809	782,732	794,695	806,705	818,767	830,888	843,072	855,321	867,640	880,030	892,494	905,034
90	16,420	667,857	680,793	693,438	705,883	718,191	730,406	742,563	754,689	766,803	778,924	791,064	803,234	815,443	827,698	840,004	852,367	864,791	877,280	889,835	902,461	915,158
95	18,081	672,618	686,188	699,338	712,204	724,876	737,415	749,866	762,262	774,629	786,987	799,352	811,737	824,151	836,604	849,107	861,648	874,250	886,912	899,636	912,425	925,283
100	19,865	676,937	691,277	705,010	718,347	731,417	744,305	757,068	769,751	782,383	794,990	807,590	820,197	832,824	845,480	858,172	870,908	883,693	896,532	909,428	922,384	935,405
105	21,778	680,699	696,004	710,418	724,285	737,793	751,058	764,158	777,145	790,058	802,925	815,770	828,608	841,455	854,321	867,215	880,144	893,116	906,135	919,207	932,333	945,519
110	23,826	683,741	700,295	715,518	729,987	743,982	757,660	771,121	784,433	797,642	810,784	823,884	836,964	850,038	863,121	876,222	889,350	902,514	915,718	928,968	942,26	

## Caractéristiques thermodynamiques du R-600a - État vapeur surchauffée - Entropie (kJ/kg.K)

Tempér. à satur. °C	Pression rosée bar	Surchauffe (°C)																				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
-100	0,004	2,577	2,609	2,642	2,673	2,705	2,736	2,767	2,797	2,828	2,858	2,888	2,918	2,947	2,976	3,006	3,035	3,063	3,092	3,121	3,149	3,178
-95	0,006	2,539	2,571	2,603	2,634	2,666	2,697	2,727	2,758	2,788	2,818	2,847	2,877	2,906	2,935	2,964	2,993	3,022	3,051	3,079	3,107	3,136
-90	0,010	2,505	2,537	2,569	2,600	2,631	2,661	2,692	2,722	2,752	2,781	2,811	2,840	2,869	2,898	2,927	2,956	2,985	3,013	3,042	3,070	3,098
-85	0,015	2,475	2,507	2,538	2,569	2,599	2,630	2,660	2,690	2,719	2,749	2,778	2,808	2,837	2,865	2,894	2,923	2,951	2,980	3,008	3,036	3,064
-80	0,023	2,448	2,479	2,510	2,541	2,571	2,602	2,631	2,661	2,691	2,720	2,749	2,778	2,807	2,836	2,865	2,893	2,921	2,950	2,978	3,006	3,034
-75	0,033	2,424	2,455	2,486	2,516	2,547	2,577	2,606	2,636	2,665	2,694	2,723	2,752	2,781	2,810	2,838	2,867	2,895	2,923	2,951	2,979	3,007
-70	0,048	2,403	2,434	2,464	2,495	2,525	2,554	2,584	2,613	2,643	2,672	2,701	2,729	2,758	2,786	2,815	2,843	2,871	2,900	2,928	2,955	2,983
-65	0,067	2,385	2,415	2,445	2,475	2,505	2,535	2,564	2,593	2,623	2,652	2,680	2,709	2,738	2,766	2,794	2,822	2,851	2,879	2,907	2,934	2,962
-60	0,093	2,368	2,398	2,429	2,459	2,488	2,518	2,547	2,576	2,605	2,634	2,663	2,691	2,720	2,748	2,776	2,804	2,832	2,860	2,888	2,916	2,944
-55	0,126	2,354	2,384	2,414	2,444	2,473	2,503	2,532	2,561	2,590	2,618	2,647	2,676	2,704	2,732	2,760	2,788	2,816	2,844	2,872	2,900	2,928
-50	0,168	2,342	2,372	2,402	2,431	2,461	2,490	2,519	2,548	2,577	2,605	2,634	2,662	2,690	2,719	2,747	2,775	2,803	2,830	2,858	2,886	2,913
-45	0,221	2,331	2,361	2,391	2,420	2,450	2,479	2,508	2,537	2,565	2,594	2,622	2,651	2,679	2,707	2,735	2,763	2,791	2,818	2,846	2,874	2,901
-40	0,287	2,323	2,352	2,382	2,411	2,441	2,470	2,498	2,527	2,556	2,584	2,613	2,641	2,669	2,697	2,725	2,753	2,781	2,808	2,836	2,864	2,891
-35	0,368	2,315	2,345	2,375	2,404	2,433	2,462	2,491	2,519	2,548	2,576	2,604	2,633	2,661	2,689	2,717	2,745	2,772	2,800	2,828	2,855	2,883
-30	0,466	2,309	2,339	2,368	2,398	2,427	2,456	2,484	2,513	2,541	2,570	2,598	2,626	2,654	2,682	2,710	2,738	2,766	2,793	2,821	2,848	2,876
-25	0,584	2,305	2,334	2,364	2,393	2,422	2,451	2,479	2,508	2,536	2,565	2,593	2,621	2,649	2,677	2,705	2,733	2,760	2,788	2,815	2,843	2,870
-20	0,725	2,301	2,331	2,360	2,389	2,418	2,447	2,476	2,504	2,533	2,561	2,589	2,617	2,645	2,673	2,701	2,729	2,756	2,784	2,811	2,839	2,866
-15	0,891	2,299	2,328	2,358	2,387	2,416	2,444	2,473	2,502	2,530	2,558	2,586	2,614	2,642	2,670	2,698	2,726	2,753	2,781	2,809	2,836	2,863
-11,76	1,013	2,298	2,327	2,357	2,386	2,415	2,443	2,472	2,500	2,529	2,557	2,585	2,613	2,641	2,669	2,697	2,725	2,752	2,780	2,807	2,835	2,862
-10	1,085	2,297	2,327	2,356	2,385	2,414	2,443	2,472	2,500	2,528	2,557	2,585	2,613	2,641	2,669	2,696	2,724	2,752	2,779	2,807	2,834	2,862
-5	1,310	2,297	2,326	2,356	2,385	2,414	2,442	2,471	2,500	2,528	2,556	2,584	2,612	2,640	2,668	2,696	2,724	2,751	2,779	2,806	2,834	2,861
0	1,570	2,297	2,327	2,356	2,385	2,414	2,443	2,471	2,500	2,528	2,557	2,585	2,613	2,641	2,669	2,696	2,724	2,752	2,779	2,807	2,834	2,861
5	1,867	2,298	2,328	2,357	2,386	2,415	2,444	2,473	2,501	2,530	2,558	2,586	2,614	2,642	2,670	2,698	2,725	2,753	2,780	2,808	2,835	2,863
10	2,206	2,300	2,330	2,359	2,388	2,417	2,446	2,475	2,503	2,532	2,560	2,588	2,616	2,644	2,672	2,700	2,727	2,755	2,783	2,810	2,837	2,865
15	2,590	2,302	2,332	2,361	2,391	2,420	2,449	2,477	2,506	2,534	2,563	2,591	2,619	2,647	2,675	2,703	2,730	2,758	2,785	2,813	2,840	2,868
20	3,022	2,305	2,335	2,365	2,394	2,423	2,452	2,481	2,509	2,538	2,566	2,594	2,622	2,650	2,678	2,706	2,734	2,761	2,789	2,816	2,844	2,871
25	3,507	2,309	2,338	2,368	2,398	2,427	2,456	2,485	2,513	2,542	2,570	2,599	2,627	2,655	2,683	2,710	2,738	2,766	2,793	2,821	2,848	2,875
30	4,047	2,312	2,342	2,372	2,402	2,431	2,460	2,489	2,518	2,546	2,575	2,603	2,631	2,659	2,687	2,715	2,743	2,771	2,798	2,826	2,853	2,880
35	4,648	2,317	2,347	2,377	2,406	2,436	2,465	2,494	2,523	2,552	2,580	2,608	2,637	2,665	2,693	2,721	2,748	2,776	2,804	2,831	2,858	2,886
40	5,312	2,321	2,352	2,382	2,412	2,441	2,470	2,500	2,528	2,557	2,586	2,614	2,642	2,671	2,699	2,726	2,754	2,782	2,809	2,837	2,864	2,892
45	6,044	2,326	2,357	2,387	2,417	2,447	2,476	2,505	2,534	2,563	2,592	2,620	2,649	2,677	2,705	2,733	2,761	2,788	2,816	2,843	2,871	2,898
50	6,849	2,331	2,362	2,392	2,423	2,453	2,482	2,511	2,541	2,569	2,598	2,627	2,655	2,683	2,712	2,740	2,767	2,795	2,823	2,850	2,878	2,905
55	7,730	2,336	2,367	2,398	2,429	2,459	2,488	2,518	2,547	2,576	2,605	2,634	2,662	2,690	2,719	2,747	2,775	2,802	2,830	2,858	2,886	2,912
60	8,692	2,341	2,373	2,404	2,435	2,465	2,495	2,525	2,554	2,583	2,612	2,641	2,669	2,698	2,726	2,754	2,782	2,810	2,838	2,865	2,893	2,920
65	9,739	2,347	2,379	2,410	2,441	2,472	2,502	2,532	2,561	2,590	2,619	2,648	2,677	2,705	2,734	2,762	2,790	2,818	2,846	2,873	2,901	2,928
70	10,875	2,352	2,384	2,416	2,448	2,478	2,509	2,539	2,568	2,598	2,627	2,656	2,685	2,713	2,742	2,770	2,798	2,826	2,854	2,881	2,909	2,936
75	12,107	2,357	2,390	2,422	2,454	2,485	2,516	2,546	2,576	2,606	2,635	2,664	2,693	2,722	2,750	2,778	2,806	2,834	2,862	2,890	2,918	2,945
80	13,438	2,362	2,396	2,428	2,461	2,492	2,523	2,553	2,584	2,613	2,643	2,672	2,701	2,730	2,758	2,787	2,815	2,843	2,871	2,899	2,926	2,954
85	14,874	2,367	2,401	2,434	2,467	2,499	2,530	2,561	2,591	2,621	2,651	2,680	2,710	2,738	2,767	2,796	2,824	2,852	2,880	2,908	2,935	2,963
90	16,420	2,371	2,406	2,440	2,473	2,506	2,537	2,569	2,599	2,629	2,659	2,689	2,718	2,747	2,776	2,805	2,833	2,861	2,889	2,917	2,945	2,973
95	18,081	2,374	2,411	2,446	2,480	2,513	2,545	2,576	2,607	2,638	2,668	2,697	2,727	2,756	2,785	2,814	2,842	2,870	2,898	2,926	2,954	2,982
100	19,865	2,377	2,415	2,450	2,486	2,519	2,552	2,584	2,615	2,646	2,676	2,706	2,735	2,764	2,793	2,822	2,850	2,878	2,906	2,934	2,962	2,990
105	21,778	2,378	2,419	2,456	2,492	2,526	2,559	2,591	2,623	2,654	2,684	2,715	2,744	2,774	2,803	2,832	2,861	2,889	2,917	2,945	2,973	3,001
110	23,826	2,379	2,421	2,460	2,497	2,532	2,566	2,598	2,630	2,662	2,693	2,723	2,753	2,783	2,812	2,841	2,870	2,899	2,927	2,955	2,983	3,011
115	26,019	2,377	2,423	2,464	2,502	2,538	2,572	2,606	2,638	2,670	2,701	2,732	2,762	2,792	2,821	2,851	2,880	2,908	2,937	2,965	2,993	3,021
120	28,366	2,371	2,424	2,467	2,507	2,543	2,579	2,613	2,646	2,678	2,710	2,740	2,771	2,801	2,831	2,860	2,889	2,918	2,946	2,975	3,003	3,031
125	30,880	2,361	2,423	2,469	2,511	2,549	2,585	2,619	2,653	2,685	2,717	2,749	2,779	2,810	2,840	2,869	2,898	2,927	2,956	2,985	3,013	3,041
130	33,578	2,340	2,419	2,470	2,514	2,553	2,590	2,626	2,660	2,693	2,725	2,757	2,788	2,819	2,849	2,878	2,908	2,937	2,966	2,994	3,023	3,051