

Thermodynamic properties of R-471A

Saturated state

Absolute Pressure P (Bar)	LIQUID					VAPOUR					Latent heat Lv (kJ/kg)
	Bubble point t'	Volume v'	Density p'	Enthalpy h'	Entropy s'	Dew point t''	Volume v''	Density p''	Enthalpy h''	Entropy s''	
	(°C)	(dm ³ /kg)	(kg/dm ³)	(kJ/kg)	(kJ/kg-K)	(°C)	(m ³ /kg)	(kg/m ³)	(kJ/kg)	(kJ/kg-K)	
0,003	-100	0,651	1,536	77,156	0,442	-94,01	37,572	0,027	311,364	1,783	234,208
0,006	-95	0,656	1,524	83,140	0,476	-89,27	22,655	0,044	314,411	1,763	231,271
0,009	-90	0,662	1,511	89,125	0,509	-84,51	14,133	0,071	317,519	1,746	228,395
0,014	-85	0,667	1,499	95,114	0,542	-79,74	9,093	0,110	320,685	1,731	225,571
0,022	-80	0,673	1,486	101,109	0,573	-74,95	6,018	0,166	323,904	1,718	222,795
0,034	-75	0,679	1,474	107,114	0,604	-70,14	4,086	0,245	327,173	1,706	220,059
0,050	-70	0,684	1,461	113,131	0,634	-65,33	2,841	0,352	330,487	1,696	217,356
0,071	-65	0,690	1,448	119,163	0,663	-60,5	2,018	0,496	333,842	1,688	214,679
0,101	-60	0,697	1,436	125,212	0,692	-55,66	1,462	0,684	337,232	1,680	212,021
0,139	-55	0,703	1,423	131,280	0,720	-50,81	1,078	0,928	340,653	1,674	209,373
0,189	-50	0,709	1,410	137,370	0,748	-45,95	0,808	1,237	344,100	1,668	206,730
0,253	-45	0,716	1,397	143,484	0,775	-41,09	0,616	1,625	347,566	1,664	204,082
0,333	-40	0,722	1,384	149,625	0,801	-36,21	0,475	2,104	351,047	1,660	201,422
0,433	-35	0,729	1,371	155,795	0,827	-31,33	0,372	2,690	354,538	1,657	198,743
0,556	-30	0,737	1,358	161,996	0,853	-26,44	0,294	3,400	358,034	1,655	196,038
0,705	-25	0,744	1,344	168,231	0,878	-21,54	0,235	4,249	361,528	1,653	193,297
0,884	-20	0,752	1,330	174,502	0,903	-16,65	0,190	5,258	365,017	1,652	190,515
1,013	-16,87	0,757	1,322	178,449	0,919	-13,57	0,167	5,981	367,196	1,652	188,747
1,097	-15	0,760	1,316	180,812	0,928	-11,74	0,155	6,447	368,494	1,652	187,683
1,349	-10	0,768	1,302	187,163	0,952	-6,83	0,128	7,838	371,955	1,651	184,793
1,643	-5	0,776	1,288	193,558	0,976	-1,92	0,106	9,455	375,395	1,651	181,837
1,985	0	0,785	1,273	200,000	1,000	2,99	0,088	11,325	378,807	1,652	178,807
2,380	5	0,795	1,259	206,492	1,023	7,91	0,074	13,475	382,187	1,653	175,694
2,833	10	0,804	1,243	213,038	1,047	12,82	0,063	15,936	385,527	1,653	172,489
3,349	15	0,814	1,228	219,641	1,070	17,74	0,053	18,744	388,823	1,655	169,182
3,933	20	0,825	1,212	226,306	1,092	22,66	0,046	21,936	392,067	1,656	165,761
4,592	25	0,837	1,195	233,037	1,115	27,58	0,039	25,556	395,252	1,657	162,215
5,331	30	0,848	1,179	239,839	1,137	32,5	0,034	29,651	398,370	1,659	158,530
6,157	35	0,861	1,161	246,720	1,160	37,42	0,029	34,277	401,410	1,660	154,691
7,075	40	0,875	1,143	253,684	1,182	42,34	0,025	39,498	404,364	1,661	150,680
8,092	45	0,889	1,125	260,739	1,204	47,26	0,022	45,388	407,217	1,663	146,478
9,215	50	0,905	1,105	267,895	1,226	52,17	0,019	52,036	409,957	1,664	142,062
10,451	55	0,922	1,085	275,160	1,248	57,09	0,017	59,547	412,564	1,665	137,404
11,807	60	0,940	1,064	282,547	1,270	62,0	0,015	68,050	415,019	1,666	132,471
13,290	65	0,960	1,041	290,072	1,292	66,9	0,013	77,708	417,297	1,667	127,225
14,908	70	0,983	1,018	297,751	1,314	71,81	0,011	88,726	419,366	1,667	121,615
16,669	75	1,008	0,992	305,612	1,336	76,7	0,010	101,374	421,188	1,667	115,576
18,584	80	1,037	0,965	313,687	1,359	81,6	0,009	116,019	422,707	1,667	109,020
20,660	85	1,070	0,935	322,025	1,381	86,48	0,008	133,186	423,847	1,665	101,822
22,908	90	1,110	0,901	330,699	1,405	91,35	0,007	153,667	424,493	1,663	93,794

Thermodynamic properties of R-471A

Superheat vapour - Entropy (kJ/kg.K)

Saturated temp. °C	Dew point pressure bar	Superheat (°C)																				
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
-95	0,003	1,787	1,805	1,822	1,840	1,857	1,874	1,892	1,908	1,925	1,942	1,958	1,974	1,990	2,006	2,022	2,038	2,053	2,069	2,084	2,099	2,114
-90	0,005	1,766	1,784	1,801	1,819	1,836	1,853	1,870	1,886	1,903	1,919	1,936	1,952	1,968	1,984	1,999	2,015	2,030	2,045	2,061	2,076	2,090
-85	0,009	1,748	1,765	1,783	1,800	1,817	1,834	1,851	1,867	1,884	1,900	1,916	1,932	1,948	1,963	1,979	1,994	2,010	2,025	2,040	2,054	2,069
-80	0,014	1,732	1,749	1,766	1,783	1,800	1,817	1,834	1,850	1,866	1,882	1,898	1,914	1,930	1,945	1,961	1,976	1,991	2,006	2,021	2,036	2,050
-75	0,022	1,718	1,735	1,752	1,769	1,786	1,802	1,819	1,835	1,851	1,867	1,883	1,899	1,914	1,930	1,945	1,960	1,975	1,990	2,005	2,019	2,034
-70	0,034	1,706	1,723	1,740	1,757	1,773	1,790	1,806	1,822	1,838	1,854	1,870	1,885	1,901	1,916	1,931	1,946	1,961	1,976	1,990	2,005	2,019
-65	0,051	1,696	1,712	1,729	1,746	1,762	1,779	1,795	1,811	1,827	1,842	1,858	1,873	1,889	1,904	1,919	1,934	1,948	1,963	1,977	1,992	2,006
-60	0,074	1,687	1,703	1,720	1,737	1,753	1,769	1,785	1,801	1,817	1,832	1,848	1,863	1,878	1,893	1,908	1,923	1,937	1,952	1,966	1,980	1,995
-55	0,105	1,679	1,696	1,712	1,729	1,745	1,761	1,777	1,792	1,808	1,823	1,839	1,854	1,869	1,884	1,899	1,913	1,928	1,942	1,956	1,971	1,985
-50	0,147	1,673	1,689	1,706	1,722	1,738	1,754	1,770	1,785	1,801	1,816	1,831	1,846	1,861	1,876	1,890	1,905	1,919	1,934	1,948	1,962	1,976
-45	0,200	1,667	1,684	1,700	1,716	1,732	1,748	1,763	1,779	1,794	1,809	1,825	1,839	1,854	1,869	1,883	1,898	1,912	1,926	1,940	1,954	1,968
-40	0,269	1,663	1,679	1,695	1,711	1,727	1,743	1,758	1,774	1,789	1,804	1,819	1,834	1,848	1,863	1,877	1,892	1,906	1,920	1,934	1,948	1,962
-35	0,356	1,660	1,676	1,692	1,708	1,723	1,739	1,754	1,769	1,785	1,800	1,814	1,829	1,844	1,858	1,872	1,887	1,901	1,915	1,929	1,942	1,956
-30	0,464	1,657	1,673	1,689	1,704	1,720	1,736	1,751	1,766	1,781	1,796	1,811	1,825	1,840	1,854	1,868	1,882	1,896	1,910	1,924	1,938	1,951
-25	0,597	1,655	1,671	1,686	1,702	1,718	1,733	1,748	1,763	1,778	1,793	1,807	1,822	1,836	1,851	1,865	1,879	1,893	1,907	1,920	1,934	1,947
-20	0,758	1,653	1,669	1,685	1,700	1,716	1,731	1,746	1,761	1,776	1,791	1,805	1,820	1,834	1,848	1,862	1,876	1,890	1,904	1,917	1,931	1,944
-15	0,951	1,652	1,668	1,684	1,699	1,714	1,730	1,745	1,759	1,774	1,789	1,803	1,818	1,832	1,846	1,860	1,874	1,888	1,901	1,915	1,928	1,942
-13,57	1,013	1,652	1,668	1,683	1,699	1,714	1,729	1,744	1,759	1,774	1,788	1,803	1,817	1,831	1,845	1,859	1,873	1,887	1,901	1,914	1,928	1,941
-10	1,182	1,652	1,667	1,683	1,698	1,714	1,729	1,744	1,758	1,773	1,788	1,802	1,816	1,830	1,844	1,858	1,872	1,886	1,899	1,913	1,926	1,940
-5	1,453	1,651	1,667	1,683	1,698	1,713	1,728	1,743	1,758	1,772	1,787	1,801	1,815	1,830	1,844	1,857	1,871	1,885	1,898	1,912	1,925	1,938
0	1,771	1,652	1,667	1,683	1,698	1,713	1,728	1,743	1,758	1,772	1,787	1,801	1,815	1,829	1,843	1,857	1,870	1,884	1,897	1,911	1,924	1,937
5	2,140	1,652	1,668	1,683	1,699	1,714	1,729	1,743	1,758	1,772	1,787	1,801	1,815	1,829	1,843	1,857	1,870	1,884	1,897	1,910	1,924	1,937
10	2,566	1,653	1,669	1,684	1,699	1,714	1,729	1,744	1,759	1,773	1,787	1,801	1,815	1,829	1,843	1,857	1,870	1,884	1,897	1,910	1,923	1,937
15	3,053	1,654	1,670	1,685	1,700	1,715	1,730	1,745	1,759	1,774	1,788	1,802	1,816	1,830	1,844	1,857	1,871	1,884	1,898	1,911	1,924	1,937
20	3,608	1,655	1,671	1,686	1,701	1,716	1,731	1,746	1,761	1,775	1,789	1,803	1,817	1,831	1,845	1,858	1,872	1,885	1,898	1,911	1,924	1,937
25	4,237	1,656	1,672	1,688	1,703	1,718	1,733	1,747	1,762	1,776	1,790	1,804	1,818	1,832	1,846	1,859	1,873	1,886	1,899	1,912	1,925	1,938
30	4,945	1,658	1,674	1,689	1,704	1,719	1,734	1,749	1,763	1,778	1,792	1,806	1,820	1,834	1,847	1,861	1,874	1,887	1,900	1,914	1,926	1,939
35	5,739	1,659	1,675	1,691	1,706	1,721	1,736	1,751	1,765	1,780	1,794	1,808	1,822	1,835	1,849	1,862	1,876	1,889	1,902	1,915	1,928	1,941
40	6,626	1,661	1,677	1,692	1,708	1,723	1,738	1,753	1,767	1,781	1,796	1,810	1,823	1,837	1,851	1,864	1,877	1,891	1,904	1,917	1,929	1,942
45	7,613	1,662	1,678	1,694	1,710	1,725	1,740	1,754	1,769	1,783	1,798	1,811	1,825	1,839	1,853	1,866	1,879	1,892	1,906	1,918	1,931	1,944
50	8,705	1,664	1,680	1,696	1,711	1,727	1,742	1,757	1,771	1,785	1,800	1,814	1,827	1,841	1,855	1,868	1,881	1,895	1,908	1,920	1,933	1,946
55	9,912	1,665	1,681	1,698	1,713	1,729	1,744	1,759	1,773	1,788	1,802	1,816	1,830	1,843	1,857	1,870	1,884	1,897	1,910	1,923	1,935	1,948
60	11,240	1,666	1,683	1,699	1,715	1,731	1,746	1,761	1,775	1,790	1,804	1,818	1,832	1,846	1,859	1,873	1,886	1,899	1,912	1,925	1,938	1,950
65	12,698	1,667	1,684	1,701	1,717	1,732	1,748	1,763	1,778	1,792	1,806	1,820	1,834	1,848	1,862	1,875	1,888	1,901	1,914	1,927	1,940	1,953
70	14,295	1,667	1,685	1,702	1,718	1,734	1,750	1,765	1,780	1,794	1,809	1,823	1,837	1,850	1,864	1,877	1,891	1,904	1,917	1,930	1,942	1,955
75	16,039	1,667	1,686	1,703	1,720	1,736	1,752	1,767	1,782	1,796	1,811	1,825	1,839	1,853	1,866	1,880	1,893	1,906	1,919	1,932	1,945	1,958
80	17,942	1,667	1,686	1,704	1,721	1,737	1,753	1,769	1,784	1,799	1,813	1,827	1,841	1,855	1,869	1,882	1,896	1,909	1,922	1,935	1,948	1,960
85	20,013	1,666	1,686	1,704	1,722	1,739	1,755	1,771	1,786	1,801	1,815	1,830	1,844	1,858	1,871	1,885	1,898	1,911	1,924	1,937	1,950	1,963
90	22,268	1,663	1,685	1,704	1,723	1,740	1,756	1,772	1,788	1,803	1,818	1,832	1,846	1,860	1,874	1,887	1,901	1,914	1,927	1,940	1,953	1,965
95	24,720	1,660	1,683	1,704	1,723	1,741	1,757	1,774	1,789	1,805	1,820	1,834	1,848	1,863	1,876	1,890	1,903	1,917	1,930	1,943	1,955	1,968