

Table A.1: Isentropic flow properties for $\gamma = 1.4$

M	T/T_0	P/P_0	A/A^*	PA/P_0A^*	μ	ν	M	T/T_0	P/P_0	A/A^*	PA/P_0A^*	μ	ν	M	T/T_0	P/P_0	A/A^*	PA/P_0A^*	μ	ν	
0.02	0.9999	0.9997	28.9421	28.9340	-	-	0.82	0.8815	0.6430	1.0305	0.6626	-	-	1.62	0.6558	0.2284	1.2666	0.2893	38.118	15.452	
0.04	0.9997	0.9989	14.4815	14.4653	-	-	0.84	0.8763	0.6300	1.0237	0.6449	-	-	1.64	0.6502	0.2217	1.2836	0.2845	37.572	16.043	
0.06	0.9993	0.9975	9.6659	9.6416	-	-	0.86	0.8711	0.6170	1.0179	0.6281	-	-	1.66	0.6447	0.2151	1.3010	0.2799	37.043	16.633	
0.08	0.9987	0.9955	7.2616	7.2292	-	-	0.88	0.8659	0.6041	1.0129	0.6119	-	-	1.68	0.6392	0.2088	1.3190	0.2754	36.530	17.222	
0.10	0.9980	0.9930	5.8218	5.7813	-	-	0.90	0.8606	0.5913	1.0089	0.5965	-	-	1.70	0.6337	0.2026	1.3376	0.2710	36.032	17.810	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.12	0.9971	0.9900	4.8643	4.8156	-	-	0.92	0.8552	0.5785	1.0056	0.5817	-	-	1.72	0.6283	0.1966	1.3567	0.2667	35.549	18.396	
0.14	0.9961	0.9864	4.1824	4.1255	-	-	0.94	0.8498	0.5658	1.0031	0.5675	-	-	1.74	0.6229	0.1907	1.3764	0.2625	35.080	18.981	
0.16	0.9949	0.9823	3.6727	3.6077	-	-	0.96	0.8444	0.5532	1.0014	0.5539	-	-	1.76	0.6175	0.1850	1.3967	0.2584	34.624	19.565	
0.18	0.9936	0.9776	3.2779	3.2047	-	-	0.98	0.8389	0.5407	1.0003	0.5409	-	-	1.78	0.6121	0.1794	1.4175	0.2544	34.180	20.146	
0.20	0.9921	0.9725	2.9635	2.8820	-	-	1.00	0.8333	0.5283	1.0000	0.5283	90.000	0.000	1.80	0.6068	0.1740	1.4390	0.2504	33.749	20.725	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.22	0.9904	0.9668	2.7076	2.6178	-	-	1.02	0.8278	0.5160	1.0003	0.5162	78.635	0.126	1.82	0.6015	0.1688	1.4610	0.2466	33.329	21.302	
0.24	0.9886	0.9607	2.4956	2.3975	-	-	1.04	0.8222	0.5039	1.0013	0.5045	74.058	0.351	1.84	0.5963	0.1637	1.4836	0.2429	32.921	21.877	
0.26	0.9867	0.9541	2.3173	2.2109	-	-	1.06	0.8165	0.4919	1.0029	0.4933	70.630	0.637	1.86	0.5910	0.1587	1.5069	0.2392	32.523	22.449	
0.28	0.9846	0.9470	2.1656	2.0508	-	-	1.08	0.8108	0.4800	1.0051	0.4825	67.808	0.968	1.88	0.5859	0.1539	1.5308	0.2356	32.135	23.019	
0.30	0.9823	0.9395	2.0351	1.9119	-	-	1.10	0.8052	0.4684	1.0079	0.4721	65.380	1.336	1.90	0.5807	0.1492	1.5553	0.2321	31.757	23.586	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.32	0.9799	0.9315	1.9219	1.7902	-	-	1.12	0.7994	0.4568	1.0113	0.4620	63.234	1.735	1.92	0.5756	0.1447	1.5804	0.2287	31.388	24.151	
0.34	0.9774	0.9231	1.8229	1.6827	-	-	1.14	0.7937	0.4455	1.0153	0.4523	61.306	2.160	1.94	0.5705	0.1403	1.6062	0.2253	31.028	24.712	
0.36	0.9747	0.9143	1.7358	1.5871	-	-	1.16	0.7879	0.4343	1.0198	0.4428	59.550	2.607	1.96	0.5655	0.1360	1.6326	0.2220	30.677	25.271	
0.38	0.9719	0.9052	1.6587	1.5014	-	-	1.18	0.7822	0.4232	1.0248	0.4337	57.936	3.074	1.98	0.5605	0.1318	1.6597	0.2188	30.335	25.827	
0.40	0.9690	0.8956	1.5901	1.4242	-	-	1.20	0.7764	0.4124	1.0304	0.4249	56.443	3.558	2.00	0.5556	0.1278	1.6875	0.2157	30.000	26.380	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.42	0.9659	0.8857	1.5289	1.3542	-	-	1.22	0.7706	0.4017	1.0366	0.4164	55.052	4.057	2.02	0.5506	0.1239	1.7160	0.2126	29.673	26.930	
0.44	0.9627	0.8755	1.4740	1.2905	-	-	1.24	0.7648	0.3912	1.0432	0.4081	53.751	4.569	2.04	0.5458	0.1201	1.7451	0.2096	29.353	27.476	
0.46	0.9594	0.8650	1.4246	1.2322	-	-	1.26	0.7590	0.3809	1.0504	0.4001	52.528	5.093	2.06	0.5409	0.1164	1.7750	0.2066	29.041	28.020	
0.48	0.9559	0.8541	1.3801	1.1788	-	-	1.28	0.7532	0.3708	1.0581	0.3924	51.375	5.627	2.08	0.5361	0.1128	1.8056	0.2037	28.736	28.560	
0.50	0.9524	0.8430	1.3398	1.1295	-	-	1.30	0.7474	0.3609	1.0663	0.3848	50.285	6.170	2.10	0.5313	0.1094	1.8369	0.2009	28.437	29.097	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.52	0.9487	0.8317	1.3034	1.0840	-	-	1.32	0.7416	0.3512	1.0750	0.3775	49.251	6.721	2.12	0.5266	0.1060	1.8690	0.1981	28.145	29.631	
0.54	0.9449	0.8201	1.2703	1.0417	-	-	1.34	0.7358	0.3417	1.0842	0.3704	48.268	7.279	2.14	0.5219	0.1027	1.9018	0.1954	27.859	30.161	
0.56	0.9410	0.8082	1.2403	1.0024	-	-	1.36	0.7300	0.3323	1.0940	0.3636	47.332	7.844	2.16	0.5173	0.0996	1.9354	0.1927	27.578	30.688	
0.58	0.9370	0.7962	1.2130	0.9658	-	-	1.38	0.7242	0.3232	1.1042	0.3569	46.439	8.413	2.18	0.5127	0.0965	1.9698	0.1901	27.304	31.212	
0.60	0.9328	0.7840	1.1882	0.9316	-	-	1.40	0.7184	0.3142	1.1149	0.3504	45.585	8.987	2.20	0.5081	0.0935	2.0050	0.1875	27.036	31.732	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.62	0.9286	0.7716	1.1656	0.8995	-	-	1.42	0.7126	0.3055	1.1262	0.3440	44.767	9.565	2.22	0.5036	0.0906	2.0409	0.1850	26.773	32.249	
0.64	0.9243	0.7591	1.1451	0.8693	-	-	1.44	0.7069	0.2969	1.1379	0.3379	43.983	10.146	2.24	0.4991	0.0878	2.0777	0.1825	26.515	32.763	
0.66	0.9199	0.7465	1.1265	0.8410	-	-	1.46	0.7011	0.2886	1.1501	0.3319	43.230	10.731	2.26	0.4947	0.0851	2.1153	0.1801	26.262	33.273	
0.68	0.9153	0.7338	1.1097	0.8142	-	-	1.48	0.6954	0.2804	1.1629	0.3261	42.507	11.317	2.28	0.4903	0.0825	2.1538	0.1777	26.014	33.780	
0.70	0.9107	0.7209	1.0944	0.7890	-	-	1.50	0.6897	0.2724	1.1762	0.3204	41.810	11.905	2.30	0.4859	0.0800	2.1931	0.1754	25.771	34.283	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.72	0.9061	0.7080	1.0806	0.7651	-	-	1.52	0.6840	0.2646	1.1899	0.3149	41.140	12.495	2.32	0.4816	0.0775	2.2333	0.1731	25.533	34.782	
0.74	0.9013	0.6951	1.0681	0.7424	-	-	1.54	0.6783	0.2570	1.2042	0.3095	40.493	13.086	2.34	0.4773	0.0751	2.2744	0.1709	25.300	35.279	
0.76	0.8964	0.6821	1.0570	0.7209	-	-	1.56	0.6726	0.2496	1.2190	0.3042	39.868	13.677	2.36	0.4731	0.0728	2.3164	0.1687	25.070	35.771	
0.78	0.8915	0.6691	1.0471	0.7005	-	-	1.58	0.6670	0.2423	1.2344	0.2991	39.265	14.269	2.38	0.4688	0.0706	2.3593	0.1665	24.845	36.261	
0.80	0.8865	0.6560	1.0382	0.6811	-	-	1.60	0.6614	0.2353	1.2502	0.2941	38.682	14.860	2.40	0.4647	0.0684	2.4031	0.1644	24.624	36.747	

Table A.2: Isentropic flow properties for $\gamma = 1.4$

M	T/T_0	P/P_0	A/A^*	PA/P_0A^*	μ	ν	M	T/T_0	P/P_0	A/A^*	PA/P_0A^*	μ	ν	M	T/T_0	P/P_0	A/A^*	PA/P_0A^*	μ	ν	
2.42	0.4606	0.0663	2.4479	0.1623	24.407	37.229	3.22	0.3253	0.0196	5.2189	0.1025	18.093	53.826	4.02	0.2363	0.0064	10.9117	0.0700	14.404	66.048	
2.44	0.4565	0.0643	2.4936	0.1602	24.195	37.708	3.24	0.3226	0.0191	5.3186	0.1015	17.977	54.179	4.04	0.2345	0.0062	11.1077	0.0694	14.331	66.309	
2.46	0.4524	0.0623	2.5403	0.1582	23.985	38.183	3.26	0.3199	0.0185	5.4201	0.1004	17.863	54.529	4.06	0.2327	0.0061	11.3068	0.0688	14.259	66.569	
2.48	0.4484	0.0604	2.5880	0.1563	23.780	38.655	3.28	0.3173	0.0180	5.5234	0.0994	17.751	54.877	4.08	0.2310	0.0059	11.5091	0.0682	14.188	66.826	
2.50	0.4444	0.0585	2.6367	0.1543	23.578	39.124	3.30	0.3147	0.0175	5.6286	0.0984	17.640	55.222	4.10	0.2293	0.0058	11.7147	0.0676	14.117	67.082	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.52	0.4405	0.0567	2.6865	0.1524	23.380	39.589	3.32	0.3121	0.0170	5.7358	0.0974	17.530	55.564	4.12	0.2275	0.0056	11.9234	0.0670	14.047	67.336	
2.54	0.4366	0.0550	2.7372	0.1505	23.185	40.050	3.34	0.3095	0.0165	5.8448	0.0964	17.422	55.904	4.14	0.2258	0.0055	12.1354	0.0664	13.978	67.588	
2.56	0.4328	0.0533	2.7891	0.1487	22.993	40.508	3.36	0.3069	0.0160	5.9558	0.0954	17.315	56.241	4.16	0.2242	0.0053	12.3508	0.0659	13.909	67.838	
2.58	0.4289	0.0517	2.8420	0.1469	22.805	40.963	3.38	0.3044	0.0156	6.0687	0.0945	17.209	56.576	4.18	0.2225	0.0052	12.5695	0.0653	13.841	68.087	
2.60	0.4252	0.0501	2.8960	0.1451	22.620	41.415	3.40	0.3019	0.0151	6.1837	0.0935	17.105	56.908	4.20	0.2208	0.0051	12.7916	0.0648	13.774	68.333	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.62	0.4214	0.0486	2.9511	0.1434	22.438	41.863	3.42	0.2995	0.0147	6.3007	0.0926	17.002	57.237	4.22	0.2192	0.0049	13.0172	0.0642	13.708	68.578	
2.64	0.4177	0.0471	3.0073	0.1417	22.259	42.307	3.44	0.2970	0.0143	6.4198	0.0917	16.900	57.564	4.24	0.2176	0.0048	13.2463	0.0637	13.642	68.821	
2.66	0.4141	0.0457	3.0647	0.1400	22.082	42.749	3.46	0.2946	0.0139	6.5409	0.0908	16.799	57.888	4.26	0.2160	0.0047	13.4789	0.0631	13.576	69.063	
2.68	0.4104	0.0443	3.1233	0.1383	21.909	43.187	3.48	0.2922	0.0135	6.6642	0.0899	16.700	58.210	4.28	0.2144	0.0046	13.7151	0.0626	13.512	69.303	
2.70	0.4068	0.0430	3.1830	0.1367	21.738	43.621	3.50	0.2899	0.0131	6.7896	0.0890	16.602	58.530	4.30	0.2129	0.0044	13.9549	0.0621	13.448	69.541	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.72	0.4033	0.0417	3.2440	0.1351	21.571	44.053	3.52	0.2875	0.0127	6.9172	0.0882	16.505	58.847	4.32	0.2113	0.0043	14.1984	0.0616	13.384	69.777	
2.74	0.3998	0.0404	3.3061	0.1335	21.405	44.481	3.54	0.2852	0.0124	7.0471	0.0873	16.409	59.162	4.34	0.2098	0.0042	14.4456	0.0611	13.321	70.012	
2.76	0.3963	0.0392	3.3695	0.1320	21.243	44.906	3.56	0.2829	0.0120	7.1791	0.0865	16.314	59.474	4.36	0.2083	0.0041	14.6965	0.0606	13.259	70.245	
2.78	0.3928	0.0380	3.4342	0.1305	21.083	45.327	3.58	0.2806	0.0117	7.3135	0.0856	16.220	59.784	4.38	0.2067	0.0040	14.9513	0.0601	13.198	70.476	
2.80	0.3894	0.0368	3.5001	0.1290	20.925	45.746	3.60	0.2784	0.0114	7.4501	0.0848	16.128	60.091	4.40	0.2053	0.0039	15.2099	0.0596	13.137	70.706	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.82	0.3860	0.0357	3.5674	0.1275	20.770	46.161	3.62	0.2762	0.0111	7.5891	0.0840	16.036	60.397	4.42	0.2038	0.0038	15.4724	0.0591	13.076	70.934	
2.84	0.3827	0.0347	3.6359	0.1261	20.617	46.573	3.64	0.2740	0.0108	7.7305	0.0832	15.946	60.700	4.44	0.2023	0.0037	15.7388	0.0586	13.016	71.161	
2.86	0.3794	0.0336	3.7058	0.1246	20.466	46.982	3.66	0.2718	0.0105	7.8742	0.0824	15.856	61.001	4.46	0.2009	0.0036	16.0092	0.0582	12.957	71.386	
2.88	0.3761	0.0326	3.7771	0.1232	20.318	47.388	3.68	0.2697	0.0102	8.0204	0.0817	15.768	61.299	4.48	0.1994	0.0035	16.2837	0.0577	12.898	71.610	
2.90	0.3729	0.0317	3.8498	0.1219	20.171	47.790	3.70	0.2675	0.0099	8.1691	0.0809	15.680	61.595	4.50	0.1980	0.0035	16.5622	0.0572	12.840	71.832	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.92	0.3696	0.0307	3.9238	0.1205	20.027	48.190	3.72	0.2654	0.0096	8.3202	0.0801	15.594	61.889	4.52	0.1966	0.0034	16.8449	0.0568	12.782	72.052	
2.94	0.3665	0.0298	3.9993	0.1192	19.885	48.586	3.74	0.2633	0.0094	8.4739	0.0794	15.508	62.181	4.54	0.1952	0.0033	17.1317	0.0563	12.725	72.271	
2.96	0.3633	0.0289	4.0763	0.1178	19.745	48.980	3.76	0.2613	0.0091	8.6302	0.0787	15.424	62.471	4.56	0.1938	0.0032	17.4228	0.0559	12.668	72.489	
2.98	0.3602	0.0281	4.1547	0.1166	19.607	49.370	3.78	0.2592	0.0089	8.7891	0.0779	15.340	62.758	4.58	0.1925	0.0031	17.7181	0.0554	12.612	72.705	
3.00	0.3571	0.0272	4.2346	0.1153	19.471	49.757	3.80	0.2572	0.0086	8.9506	0.0772	15.258	63.044	4.60	0.1911	0.0031	18.0178	0.0550	12.556	72.919	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.02	0.3541	0.0264	4.3160	0.1140	19.337	50.142	3.82	0.2552	0.0084	9.1148	0.0765	15.176	63.327	4.62	0.1898	0.0030	18.3218	0.0546	12.501	73.132	
3.04	0.3511	0.0256	4.3989	0.1128	19.205	50.523	3.84	0.2532	0.0082	9.2817	0.0758	15.095	63.608	4.64	0.1885	0.0029	18.6303	0.0541	12.446	73.344	
3.06	0.3481	0.0249	4.4835	0.1116	19.075	50.902	3.86	0.2513	0.0080	9.4513	0.0752	15.015	63.887	4.66	0.1872	0.0028	18.9433	0.0537	12.392	73.554	
3.08	0.3452	0.0242	4.5696	0.1104	18.946	51.277	3.88	0.2493	0.0077	9.6237	0.0745	14.936	64.164	4.68	0.1859	0.0028	19.2608	0.0533	12.338	73.763	
3.10	0.3422	0.0234	4.6573	0.1092	18.819	51.650	3.90	0.2474	0.0075	9.7990	0.0738	14.857	64.440	4.70	0.1846	0.0027	19.5828	0.0529	12.284	73.970	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3.12	0.3393	0.0228	4.7467	0.1080	18.694	52.020	3.92	0.2455	0.0073	9.9771	0.0731	14.780	64.713	4.72	0.1833	0.0026	19.9095	0.0525	12.232	74.176	
3.14	0.3365	0.0221	4.8377	0.1069	18.571	52.386	3.94	0.2436	0.0071	10.1581	0.0725	14.703	64.984	4.74	0.1820	0.0026	20.2409	0.0521	12.179	74.381	
3.16	0.3337	0.0215	4.9304	0.1058	18.449	52.751	3.96	0.2418	0.0069	10.3420	0.0719	14.627	65.253	4.76	0.1808	0.0025	20.5770	0.0517	12.127	74.584	
3.18	0.3309	0.0208	5.0248	0.1047	18.329	53.112	3.98	0.2399	0.0068	10.5289	0.0712	14.552	65.520	4.78	0.1795	0.0025	20.9179	0.0513	12.076	74.786	
3.20	0.3281	0.0202	5.1210	0.1036	18.210	53.470	4.00	0.2381	0.0066	10.7188	0.0706	14.478	65.785	4.80	0.1783	0.0024	21.2637	0.0509	12.025	74.986	