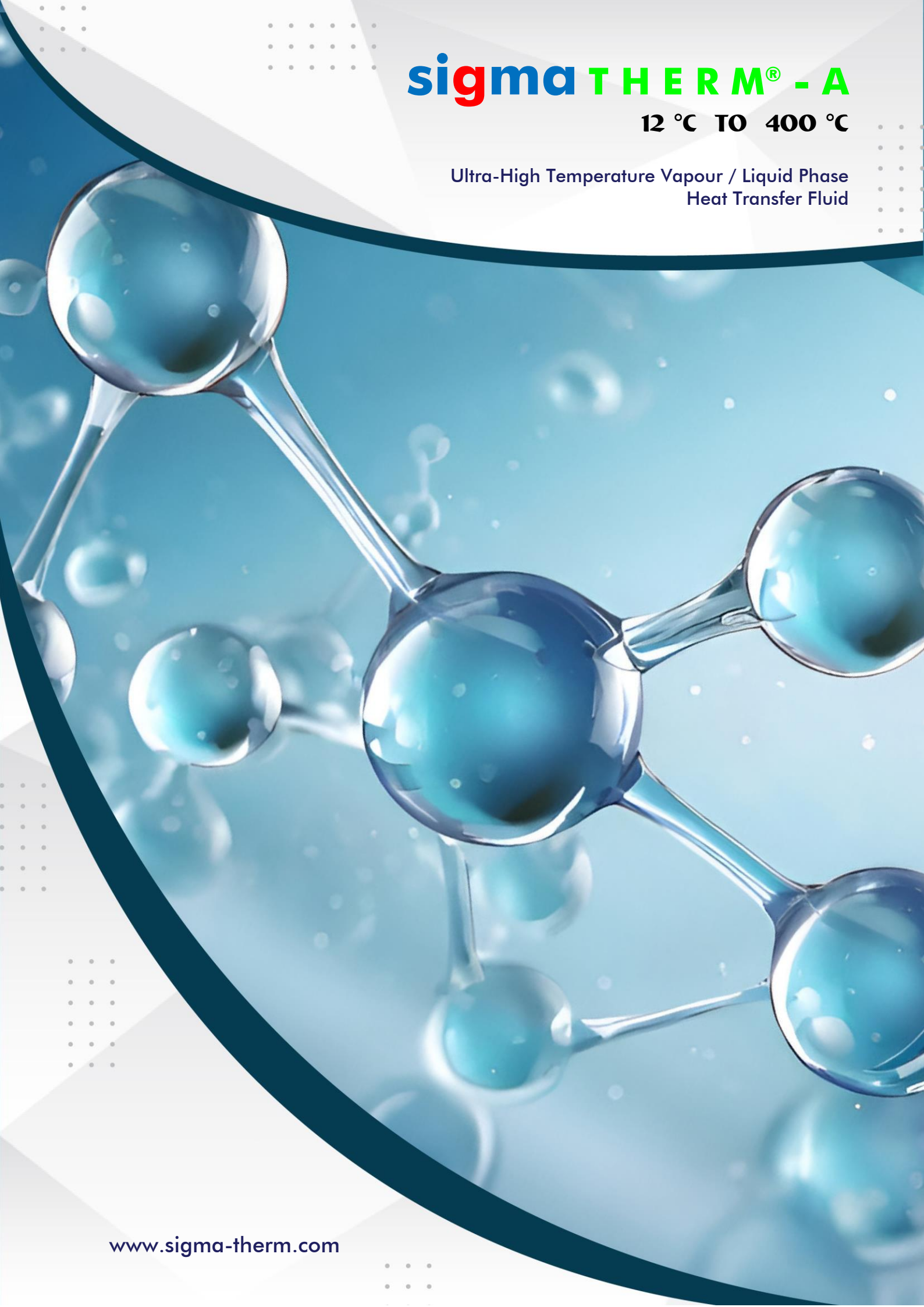
sigma THERM® - A

12 °C TO 400 °C

Ultra-High Temperature Vapour / Liquid Phase
Heat Transfer Fluid



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Ultra High Temperature Vapour / Liquid Phase Heat Transfer Fluid

sigma THERM® - A

Description:

sigma THERM®- A is a thermally stable pure heat transfer fluid which offers excellent heat transfer capabilities in both liquid and vapor phase up to 400 °C .

Application :

Liquid Phase : 12 °C – 400 °C
Vapor Phase : 257 °C – 400 °C

Benefits :

- Cost optimized solution for maximum value.
- Thermally more stable thermic fluids than the ones available in market.
- Non- corrosive to metal.
- sigma THERM®- A can also be used for top up / make up for the system containing other similar fluids.

Compatibility :

Metal : sigma THERM®- A is compatible with all metals.

Typical Properties :

Composition	Biphenyl/Diphenyl Oxide eutectic Mixture
Max. Bulk Temperature	400 °C
Max. Film Temperature	430 °C
Normal Boiling Point	257 °C
Crystallization Point	12 °C
Neutralization number	0.01 (mg KOH/g)
Flash Point	125 °C
Moisture content	< 250 ppm
Average Molecular weight	166
Auto Ignition Temperature	620 °C
Sulfur Content	< 10 ppm
Copper Corrosion	<< 1a
Volume Contraction on Freezing	6.27 %
Volume expansion on melting	6.69%
Pseudocritical Temperature	499 °C
Pseudocritical Pressure	33.1 bar
Pseudocritical density	327kg/m^3
Heat of Vaporisation at maximum usage Temperature	206 kJ/kg

Packing :

220 Kgs., 35 Kgs.

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Liquid Properties

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Temp	Density	Specific Heat	Heat of Vaporisation	Liquid Enthalpy	Thermal Conductivity	Viscosity		Vapour Pressure
						cP	cSt	
°C	Kg/m³	KJ/Kg K	KJ/Kg	KJ/Kg	W/m K	mPa.s	mm²/s	kPa
12	1068	1.538	418.2	0.0	0.1397	5.45	5.09	-
20	1062	1.561	413.9	12.3	0.1390	4.27	4.01	0.001
30	1054	1.591	408.5	27.9	0.1380	3.26	3.09	0.004
40	1046	1.620	403.1	43.7	0.1371	2.59	2.47	0.009
50	1038	1.649	397.8	59.9	0.1360	2.11	2.02	0.019
60	1030	1.679	392.5	76.3	0.1349	1.75	1.70	0.041
70	1022	1.707	387.3	93.1	0.1338	1.48	1.45	0.081
80	1013	1.736	382.1	110.0	0.1326	1.27	1.25	0.153
90	1005	1.764	377.0	127.4	0.1315	1.11	1.10	0.275
100	997	1.793	372.0	145.0	0.1303	0.98	0.98	0.476
110	989	1.821	366.9	162.9	0.1289	0.87	0.88	0.793
120	980	1.849	361.9	180.9	0.1277	0.78	0.79	1.28
130	972	1.877	356.8	199.4	0.1264	0.70	0.72	2
140	963	1.905	351.9	218.1	0.1250	0.64	0.66	3.04
150	955	1.932	346.9	237.0	0.1236	0.58	0.61	4.51
160	946	1.960	342.0	256.3	0.1221	0.53	0.56	6.55
170	938	1.988	337.0	275.8	0.1207	0.49	0.52	9.29
180	929	2.015	332.1	295.6	0.1191	0.45	0.49	13
190	920	2.041	327.2	315.6	0.1176	0.42	0.46	17.8
200	911	2.068	322.4	336.0	0.1161	0.39	0.43	23.9
210	902	2.096	317.4	356.6	0.1144	0.37	0.40	31.6
220	893	2.122	312.4	377.4	0.1128	0.34	0.38	41.4
230	884	2.149	307.4	398.5	0.1111	0.32	0.36	53.5
240	875	2.176	302.4	419.9	0.1093	0.30	0.35	68.3
250	865	2.203	297.3	441.5	0.1076	0.29	0.33	86.1
260	855	2.229	292.1	463.4	0.1059	0.27	0.32	108
270	846	2.256	286.9	485.6	0.1040	0.26	0.30	133
280	836	2.283	281.6	508.0	0.1022	0.24	0.29	163
290	825	2.310	276.2	530.8	0.1003	0.23	0.28	198
300	815	2.337	270.7	553.8	0.0983	0.22	0.27	239
310	804	2.364	265.1	576.9	0.0964	0.21	0.26	285
320	794	2.393	259.2	600.5	0.0944	0.20	0.25	339
330	782	2.421	253.3	624.3	0.0923	0.19	0.24	400
340	771	2.449	247.1	648.3	0.0903	0.18	0.24	469
350	759	2.479	240.8	672.7	0.0881	0.18	0.23	547
360	748	2.510	234.2	697.4	0.0860	0.17	0.23	634
370	735	2.542	227.3	722.3	0.0838	0.16	0.22	731
380	722	2.577	220.3	747.6	0.0816	0.16	0.22	838
390	708	2.614	212.8	773.2	0.0794	0.15	0.21	957
400	693	2.654	204.9	799.3	0.0771	0.15	0.21	1088
410	678	2.701	196.6	825.8	0.0748	0.14	0.21	1228
420	661	2.756	187.6	852.7	0.0724	0.14	0.20	1387

Note : Above data is for reference only

Temp	Vapour Density	Specific Heat	Vapour Enthalpy	Thermal Conductivity	Viscosity	
					cP	cSt
°C	Kg/m³	KJ/Kg K	KJ/Kg	W/m K	mPa.s	mm²/s
12	-	0.986	418.4	0.0083	0.006	-
20	-	1.010	426.4	0.0087	0.006	-
30	0.0002	1.050	436.5	0.0092	0.006	-
40	0.0006	1.081	447.0	0.0097	0.006	-
50	0.0012	1.111	457.9	0.0102	0.007	-
60	0.0025	1.151	469.1	0.0107	0.007	2706
70	0.0047	1.182	480.6	0.0112	0.007	1443
80	0.0086	1.212	492.5	0.0118	0.007	813
90	0.0152	1.242	504.5	0.0123	0.007	477
100	0.0255	1.283	517.0	0.0129	0.008	292
110	0.0414	1.313	529.9	0.0135	0.008	184
120	0.0650	1.343	543.0	0.0140	0.008	120
130	0.0992	1.374	556.4	0.0146	0.008	81.1
140	0.1480	1.404	570.1	0.0151	0.008	56.0
150	0.2140	1.434	584.1	0.0157	0.009	39.6
160	0.3020	1.465	598.5	0.0163	0.009	28.7
170	0.4210	1.495	613.1	0.0169	0.009	21.1
180	0.574	1.525	628.0	0.0174	0.009	15.8
190	0.769	1.555	643.0	0.0181	0.009	12.0
200	1.020	1.586	658.4	0.0187	0.010	9.33
210	1.330	1.616	674.1	0.0193	0.010	7.32
220	1.710	1.646	690.0	0.0199	0.010	5.82
230	2.170	1.677	706.0	0.0205	0.010	4.68
240	2.710	1.697	722.4	0.0211	0.010	3.80
250	3.370	1.727	739.0	0.0217	0.011	3.11
260	4.160	1.757	755.8	0.0223	0.011	2.58
270	5.080	1.788	772.6	0.0231	0.011	2.15
280	6.160	1.808	789.8	0.0237	0.011	1.81
290	7.41	1.838	807.1	0.0243	0.011	1.53
300	8.84	1.858	824.6	0.0250	0.012	1.30
310	11	1.889	842.1	0.0256	0.012	1.12
320	12	1.919	859.8	0.0263	0.012	0.965
330	15	1.939	877.7	0.0269	0.012	0.837
340	17	1.970	895.6	0.0276	0.012	0.727
350	20	1.990	913.6	0.0283	0.013	0.636
360	23	2.020	931.7	0.0290	0.013	0.557
370	26	2.050	949.9	0.0297	0.013	0.491
380	30	2.071	968.0	0.0304	0.013	0.433
390	35	2.101	986.2	0.0310	0.013	0.382
400	40	2.131	1004.3	0.0317	0.014	0.339
410	46	2.161	1022.5	0.0324	0.014	0.300
420	52	2.192	1040.4	0.0332	0.014	0.267

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