

# VP-3

## THERMINOL® VP-3

Heat Transfer Fluid by Solutia

Vapor Phase/  
Liquid Phase  
Heat Transfer Fluid

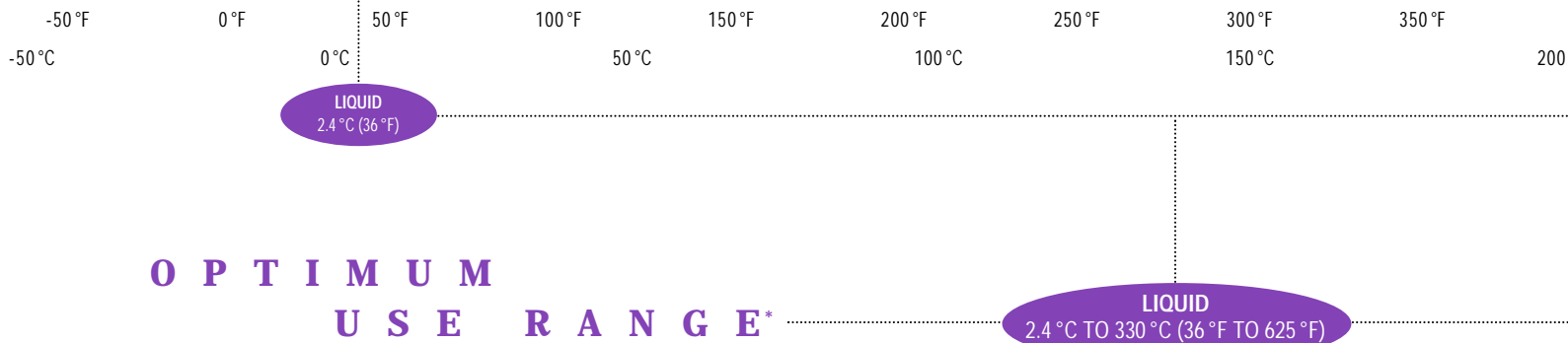
36 °F to  
625 °F



+700 °F  
+350 °C  
+600 °F  
+300 °C  
+500 °F  
+250 °C  
+400 °F  
+200 °C  
+150 °C +300 °F  
+100 °C  
+200 °F  
+50 °C  
+100 °F  
0 °C  
0 °F  
-50 °C  
-100 °F

VAPOR USE RANGE

LIQUID USE RANGE



## OPTIMUM USE RANGE\*

LIQUID  
2.4 °C TO 330 °C (36 °F TO 625 °F)

Therminol VP-3 liquid/vapor phase heat transfer fluid was specially developed to allow vapor phase heat transfer at lower temperatures than are practical with traditional diphenyl oxide/biphenyl constituted fluids like Therminol® VP-1.

# THERMINOL® VP-3\*\*

## Heat Transfer Fluid by Solutia

### PHYSICAL AND CHEMICAL CHARACTERISTICS

#### Operating Range

Therminol VP-3 has a normal boiling point of 243 °C (469 °F), 14 °C (26 °F) below the normal boiling point of Therminol VP-1. Laboratory thermal stability testing suggests a maximum continuous operating temperature of 330 °C (625 °F) in the liquid or vapor phase. A crystallization point of 2.4 °C (36 °F) makes Therminol VP-3 easy to handle and may eliminate the need for costly heat tracing in moderate climates.

#### Composition

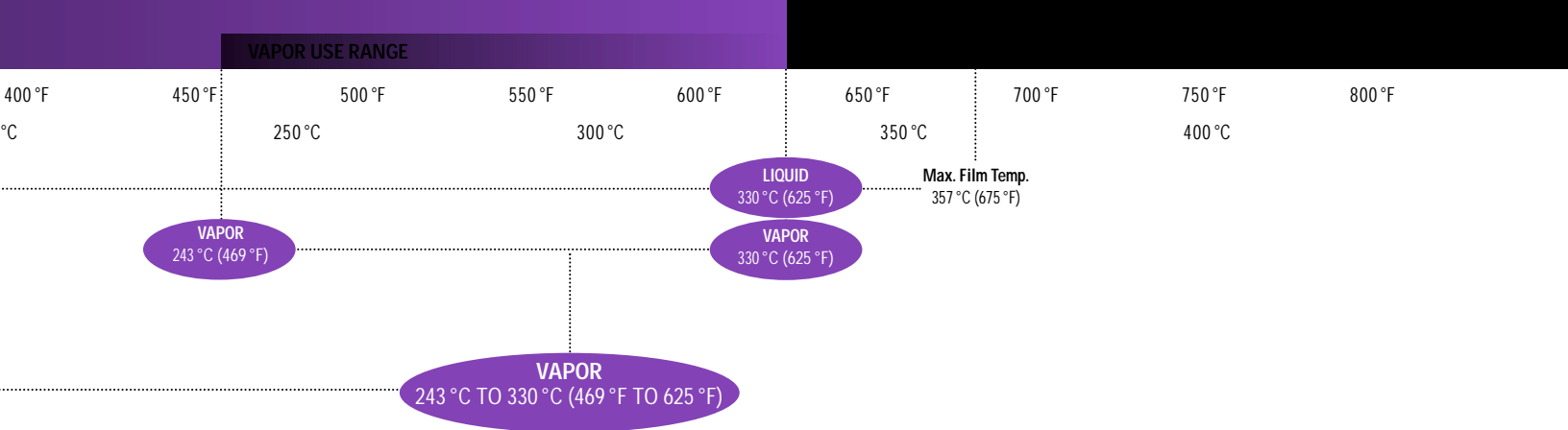
Therminol VP-3 is a mixture of approximately 90% phenylcyclohexane and 10% bicyclohexyl. It contains virtually no biphenyl. The odor of Therminol VP-3 is milder than other vapor phase organic heat transfer fluids.

#### Combustibility

With an open cup flash point of 104 °C (219 °F), Therminol VP-3 is a Class III b combustible fluid under the definitions of the NFPA (National Fire Prevention Association). As with any other combustible material, proper system design and operation are important to safe operation. Leaks of vapor could condense into a stable mist suspension that may be explosive in certain concentrations in air.

### TABLE OF CONTENTS

Physical and Chemical Characteristics	Inside Front Cover
Typical Properties	1
Liquid Properties of Therminol® VP-3 Heat Transfer Fluid	2
Vapor Properties of Therminol® VP-3 Heat Transfer Fluid	4



## TYPICAL PROPERTIES\*

<b>Composition</b>		Phenylcyclohexane (90% min) + bicyclohexyl (<10%)
<b>Appearance</b>		Above 2.4 °C (36 °F) clear, sediment free liquid
<b>Max. Bulk Temperature</b>		330 °C (625 °F)
<b>Max. Film Temperature</b>		357 °C (675 °F)
<b>Kinematic Viscosity @ 40 °C</b>	ASTM D446	2.04 cSt (mm <sup>2</sup> /s)
<b>Density @ 40 °C</b>		7.70 lb/gal (923 kg/m <sup>3</sup> )
<b>Flash Point, Open Cup</b>	ASTM D-92	104 °C (219 °F)
<b>Fire Point</b>	ASTM D-92	113 °C (235 °F)
<b>Autoignition Temperature</b>	ASTM D-2155	351 °C (663 °F)
<b>Crystallization Point</b>		2.4 °C (36 °F)
<b>Boiling Point @ 1 atm</b>		243 °C (469 °F)
<b>Coefficient of Thermal Expansion at 200 °C</b>		0.001204/°C
<b>Moisture Content</b>	ASTM E203-75	<150 ppm
<b>Average Molecular Weight</b>		161
<b>Specific Gravity (60 °F/60 °F)</b>		0.936
<b>Surface Tension @ 25 °C</b>		43.2 dynes/cm
<b>Pseudocritical Temperature</b>		406 °C (764 °F)
<b>Pseudocritical Pressure</b>		38.5 bar (558.4 psia)
<b>Pseudocritical Density</b>		352 kg/m <sup>3</sup> (22.0 lb/ft <sup>3</sup> )

Note: Values quoted are typical values obtained in the laboratory from production samples. Other samples might exhibit different data. Specifications are subject to change. Write to Solutia for current sales specification.

\* Does not constitute an express warranty. See NOTICE on last page.

# LIQUID PROPERTIES OF THERMINOL®

Temperature		Liquid Density			Liquid Heat Capacity		Liquid Enthalpy**	
°F	°C	lb/gal	lb/ft <sup>3</sup>	kg/m <sup>3</sup>	Btu/(lb·°F) [cal/(g·°C)]	kJ/(kg·K)	Btu/lb	kJ/kg
40	4	7.85	58.8	941	0.365	1.53	0	0
60	16	7.81	58.4	936	0.378	1.58	7.44	17.3
80	27	7.76	58.0	930	0.391	1.64	15.1	35.2
100	38	7.71	57.7	924	0.403	1.69	23.1	53.6
120	49	7.66	57.3	918	0.416	1.74	31.3	72.7
140	60	7.60	56.9	911	0.428	1.79	39.7	92.3
160	71	7.55	56.4	904	0.439	1.84	48.4	112.4
180	82	7.49	56.0	897	0.451	1.88	57.3	133.1
200	93	7.42	55.5	890	0.462	1.93	66.4	154.3
220	104	7.36	55.1	882	0.473	1.98	75.7	176.0
240	116	7.29	54.6	874	0.483	2.02	85.3	198.3
260	127	7.22	54.0	866	0.494	2.07	95.1	221.0
280	138	7.15	53.5	857	0.504	2.11	105.0	244.2
300	149	7.08	52.9	848	0.514	2.15	115.2	267.8
320	160	7.00	52.4	839	0.524	2.19	125.6	292.0
340	171	6.92	51.8	829	0.534	2.23	136.2	316.6
360	182	6.84	51.1	819	0.543	2.27	150.0	341.6
380	193	6.75	50.5	809	0.553	2.31	157.9	367.1
400	204	6.66	49.8	798	0.562	2.35	169.1	393.0
420	216	6.57	49.1	787	0.571	2.39	180.4	419.3
440	227	6.47	48.4	776	0.581	2.43	191.9	446.1
460	238	6.37	47.7	764	0.590	2.47	203.6	473.3
469††	243	6.33	47.3	758	0.595	2.49	209.1	486.0
480	249	6.27	46.9	751	0.600	2.51	215.5	501.1
500	260	6.16	46.1	738	0.611	2.56	227.6	529.2
520	271	6.05	45.3	725	0.622	2.60	240.0	557.8
540	282	5.93	44.4	711	0.634	2.65	252.5	587.0
560	293	5.81	43.5	696	0.647	2.71	265.3	616.8
580	304	5.68	42.5	681	0.663	2.78	278.4	647.2
600	316	5.54	41.5	664	0.683	2.86	291.9	678.5
620	327	5.40	40.4	647	0.708	2.96	305.8	710.8
625	329	5.36	40.1	642	0.715	2.99	309.3	719.0
640	338	5.24	39.2	628	0.741	3.10	320.2	744.4
660	349	5.07	38.0	608	0.791	3.31	335.5	779.9
680	360	4.89	36.6	586	0.869	3.63	352.1	818.3

\* Maximum recommended bulk temperature is 330°C (625°F).

† These data are based upon samples tested in the laboratory and are not guaranteed for all samples.

\*\* The enthalpy basis is zero at 4.4°C (40°F).

†† The normal boiling temperature is 243°C (469°F).

# VP - 3 HEAT TRANSFER FLUID \* †

Liquid Thermal Conductivity			Liquid Viscosity			Vapor Pressure				Temperature	
Btu/ (ft·h·°F)	kcal/ (m·h·°C)	W/(m·K)	lb/(ft·h)	cSt [mm <sup>2</sup> /s]	cP [mPa·s]	psia	mm Hg	kgf/cm <sup>2</sup>	kPa	°F	°C
0.0690	0.1027	0.1194	11.3	4.96	4.67	0.0001	0.0057		0.0008	40	4
0.0682	0.1015	0.1180	8.03	3.55	3.32	0.0003	0.0157		0.0021	60	16
0.0674	0.1003	0.1166	6.03	2.68	2.49	0.0008	0.0397		0.0053	80	27
0.0666	0.0991	0.1152	4.73	2.12	1.96	0.0018	0.0936		0.0125	100	38
0.0658	0.0978	0.1137	3.85	1.73	1.59	0.0040	0.2075		0.0277	120	49
0.0649	0.0966	0.1123	3.22	1.46	1.33	0.0084	0.4350	0.0006	0.0580	140	60
0.0641	0.0954	0.1109	2.75	1.26	1.14	0.0168	0.8675	0.0012	0.116	160	71
0.0633	0.0941	0.1094	2.40	1.10	0.990	0.0320	1.654	0.0022	0.220	180	82
0.0624	0.0929	0.1080	2.12	0.984	0.876	0.0585	3.027	0.0041	0.404	200	93
0.0616	0.0917	0.1065	1.90	0.888	0.783	0.103	5.338	0.0073	0.712	220	104
0.0607	0.0904	0.1051	1.71	0.810	0.708	0.176	9.101	0.0124	1.21	240	116
0.0599	0.0891	0.1036	1.56	0.749	0.644	0.291	15.0	0.0205	2.01	260	127
0.0590	0.0879	0.1021	1.43	0.688	0.589	0.468	24.2	0.0329	3.22	280	138
0.0582	0.0866	0.1006	1.31	0.639	0.542	0.732	37.9	0.0515	5.05	300	149
0.0573	0.0853	0.0991	1.21	0.597	0.500	1.12	57.9	0.0787	7.72	320	160
0.0565	0.0840	0.0976	1.12	0.559	0.463	1.68	86.6	0.118	11.6	340	171
0.0556	0.0827	0.0962	1.04	0.525	0.430	2.46	127	0.173	16.9	360	182
0.0547	0.0814	0.0946	0.966	0.494	0.399	3.53	183	0.248	24.4	380	193
0.0538	0.0801	0.0931	0.898	0.465	0.371	4.99	258	0.351	34.4	400	204
0.0530	0.0788	0.0916	0.836	0.440	0.346	6.94	359	0.488	47.9	420	216
0.0521	0.0775	0.0901	0.778	0.415	0.322	9.51	492	0.669	65.6	440	227
0.0512	0.0762	0.0885	0.724	0.392	0.299	12.8	664	0.904	88.6	460	238
0.0508	0.0756	0.0878	0.701	0.382	0.290	14.7	760	1.03	101	469	243
0.0503	0.0748	0.0870	0.674	0.371	0.279	17.1	886	1.20	118	480	249
0.0494	0.0735	0.0854	0.627	0.351	0.259	22.6	1170	1.59	156	500	260
0.0485	0.0722	0.0839	0.583	0.333	0.241	29.4	1520	2.06	202	520	271
0.0476	0.0708	0.0823	0.542	0.315	0.224	37.8	1960	2.66	261	540	282
0.0467	0.0695	0.0807	0.504	0.299	0.208	48.2	2490	3.39	332	560	293
0.0458	0.0681	0.0792	0.468	0.284	0.193	60.8	3140	4.28	419	580	304
0.0448	0.0667	0.0776	0.434	0.270	0.179	76.1	3930	5.35	524	600	316
0.0439	0.0653	0.0760	0.402	0.257	0.166	94.4	4880	6.63	651	620	327
0.0437	0.0650	0.0756	0.395	0.254	0.163	99.5	5140	6.99	686	625	329
0.0430	0.0640	0.0743	0.372	0.245	0.154	116	6000	8.16	800	640	338
0.0420	0.0626	0.0727	0.345	0.234	0.142	142	7330	9.97	978	660	349
0.0411	0.0612	0.0711	0.319	0.225	0.132	172	8890	12.1	1180	680	360

3

TECHNICAL SERVICE HOTLINE (800) 433-6997



# VAPOR PROPERTIES OF THERMINOL®

Temperature		Vapor Density		Vapor Heat Capacity		Heat of Vaporization		Vapor Enthalpy**	
°F	°C	lb/ft <sup>3</sup>	kg/m <sup>3</sup>	Btu/(lb·°F) [cal/(g·°C)]	kJ/(kg·K)	Btu/lb	kJ/kg	Btu/lb	kJ/kg
40	4	0.000003	0.00005	0.259	1.08	229.4	533.3	229.4	533.3
60	16	0.000009	0.00014	0.271	1.13	227.3	528.4	234.8	545.7
80	27	0.00002	0.00034	0.282	1.18	225.2	523.4	240.3	558.5
100	38	0.00005	0.00078	0.294	1.23	223.0	518.3	246.0	571.9
120	49	0.00010	0.00167	0.305	1.28	220.8	513.2	252.0	585.9
140	60	0.00021	0.00337	0.317	1.32	218.6	508.1	258.3	600.3
160	71	0.00041	0.00651	0.328	1.37	216.4	502.9	264.7	615.3
180	82	0.00075	0.0120	0.339	1.42	214.1	497.7	271.4	630.8
200	93	0.00133	0.0213	0.350	1.46	211.9	492.5	278.3	646.8
220	104	0.00228	0.0365	0.361	1.51	209.6	487.3	285.4	663.3
240	116	0.00378	0.0605	0.372	1.56	207.4	482.1	292.7	680.3
260	127	0.00607	0.0972	0.382	1.60	205.2	476.9	300.2	697.9
280	138	0.00950	0.152	0.393	1.64	202.9	471.7	308.0	715.9
300	149	0.0145	0.232	0.403	1.69	200.7	466.5	315.9	734.3
320	160	0.0216	0.346	0.414	1.73	198.5	461.3	324.1	753.3
340	171	0.0315	0.505	0.424	1.77	196.2	456.1	332.4	772.7
360	182	0.0452	0.723	0.434	1.82	194.0	450.9	341.0	792.5
380	193	0.0635	1.02	0.444	1.86	191.8	445.7	349.7	812.8
400	204	0.0879	1.41	0.454	1.90	189.5	440.5	358.6	833.5
420	216	0.120	1.92	0.463	1.94	187.3	435.3	367.7	854.6
440	227	0.161	2.58	0.473	1.98	185.0	430.0	376.9	876.1
460	238	0.213	3.42	0.482	2.02	182.7	424.6	386.3	897.9
469 <sup>††</sup>	243	0.242	3.88	0.486	2.04	181.6	422.1	390.7	908.1
480	249	0.280	4.48	0.491	2.06	180.3	419.1	395.9	920.1
500	260	0.363	5.81	0.500	2.09	177.9	413.5	405.6	942.7
520	271	0.466	7.46	0.510	2.13	175.4	407.7	415.4	965.5
540	282	0.592	9.49	0.518	2.17	172.8	401.6	425.3	988.6
560	293	0.747	12.0	0.527	2.21	170.0	395.2	435.4	1012
580	304	0.935	15.0	0.536	2.24	167.1	388.4	445.5	1036
600	316	1.16	18.6	0.545	2.28	163.8	380.9	455.7	1059
620	327	1.44	23.0	0.554	2.32	160.2	372.5	466.0	1083
625	329	1.51	24.3	0.556	2.33	159.3	370.2	468.6	1089
640	338	1.77	28.3	0.563	2.36	156.1	362.9	476.4	1107
660	349	2.16	34.7	0.572	2.39	151.2	351.4	486.7	1131
680	360	2.64	42.3	0.581	2.43	145.0	337.1	497.1	1156

\* Maximum recommended bulk temperature is 330°C (625°F).

† These data are based upon samples tested in the laboratory and are not guaranteed for all samples.

\*\* The enthalpy basis is zero at 4.4°C (40°F).

†† The normal boiling temperature is 243°C (469°F).

# VP - 3 HEAT TRANSFER FLUID \* †

Vapor Thermal Conductivity			Vapor Viscosity			Temperature	
Btu/ (ft·h·°F)	kcal/ (m·h·°C)	W/(m·K)	lb/(ft·h)	cSt [mm <sup>2</sup> /s]	cP [mPa·s]	°F	°C
0.0049	0.0073	0.0085	0.0163		0.00674	40	4
0.0054	0.0080	0.0094	0.0170		0.00702	60	16
0.0059	0.0088	0.0103	0.0176		0.00729	80	27
0.0065	0.0096	0.0112	0.0183		0.00757	100	38
0.0070	0.0104	0.0121	0.0190		0.00785	120	49
0.0075	0.0112	0.0130	0.0197		0.00813	140	60
0.0081	0.0120	0.0140	0.0203	1290	0.00841	160	71
0.0086	0.0129	0.0150	0.0210	723	0.00869	180	82
0.0092	0.0137	0.0159	0.0217	420	0.00897	200	93
0.0098	0.0146	0.0169	0.0224	253	0.00925	220	104
0.0104	0.0154	0.0179	0.0230	158	0.00953	240	116
0.0109	0.0163	0.0189	0.0237	101	0.00981	260	127
0.0115	0.0172	0.0199	0.0244	66.3	0.0101	280	138
0.0121	0.0180	0.0210	0.0251	44.7	0.0104	300	149
0.0127	0.0189	0.0220	0.0258	30.8	0.0106	320	160
0.0133	0.0198	0.0231	0.0264	21.6	0.0109	340	171
0.0140	0.0208	0.0241	0.0271	15.5	0.0112	360	182
0.0146	0.0217	0.0252	0.0278	11.3	0.0115	380	193
0.0152	0.0226	0.0263	0.0284	8.36	0.0118	400	204
0.0158	0.0236	0.0274	0.0291	6.28	0.0120	420	216
0.0165	0.0245	0.0285	0.0298	4.78	0.0123	440	227
0.0171	0.0255	0.0296	0.0304	3.68	0.0126	460	238
0.0174	0.0259	0.0301	0.0307	3.28	0.0127	469	243
0.0178	0.0264	0.0307	0.0311	2.87	0.0129	480	249
0.0184	0.0274	0.0319	0.0318	2.26	0.0131	500	260
0.0191	0.0284	0.0330	0.0324	1.80	0.0134	520	271
0.0198	0.0294	0.0342	0.0331	1.44	0.0137	540	282
0.0204	0.0304	0.0354	0.0337	1.16	0.0139	560	293
0.0211	0.0314	0.0366	0.0344	0.948	0.0142	580	304
0.0218	0.0325	0.0378	0.0350	0.776	0.0145	600	316
0.0225	0.0335	0.0390	0.0356	0.640	0.0147	620	327
0.0227	0.0338	0.0393	0.0358	0.610	0.0148	625	329
0.0232	0.0346	0.0402	0.0363	0.529	0.0150	640	338
0.0239	0.0356	0.0414	0.0369	0.440	0.0152	660	349
0.0247	0.0367	0.0426	0.0375	0.367	0.0155	680	360

# WORLDWIDE SALES OFFICES

## UNITED STATES

### For order assistance

Please call our Customer Service Department, toll free at (800) 426-2463.

### For technical assistance

Please call our Technical Service Hotline, toll free at (800) 433-6997.

#### Houston

1800 West Loop South  
Suite 1360  
Houston, Texas 77027  
Tel: (713) 850-0088  
Fax: (713) 850-0096

#### St. Louis

P.O. Box 66760  
St. Louis, Missouri 63166-6760  
Tel: (314) 674-1000  
Fax: (314) 674-6331

## INTERNATIONAL SALES OFFICES

### Argentina

Solutia Argentina S.R.L.  
Alicia Moreau de Justo, 1960  
2nd Floor – Office 203  
Buenos Aires, Argentina  
Tel: 54-11-4515-0709  
Fax: 54-11-4515-0728

### Australia

Solutia Australia Pty. Ltd.  
Level 1, 437 Canterbury Road  
Surrey Hills, Victoria 3127  
Australia  
Tel: 61-3-9888-4590  
Fax: 61-3-9888-4562

### Belgium

Solutia Europe N.V./S.A.  
Rue Lald Burniat, 3  
Parc Scientifique - Fleming  
B-1348 Louvain-la-Neuve (Sud)  
Belgium  
Tel: 32-10-481547  
Fax: 32-10-481212

### Brazil

Solutia Brazil Ltda.  
Rua Gomes de Carvalho  
1306-60. Andar 04547-005  
Sao Paulo, SP, Brazil  
Tel: 55-11-3365-1811  
Fax: 55-11-3365-1818

### Canada

Solutia Canada Inc.  
6800 St. Patrick Street  
LaSalle, Quebec  
Canada H8N 2H3  
Tel: 514-366-4855  
Fax: 514-366-9933

### China-PRC

Solutia Chemical Co. Ltd., Suzhou  
9th Floor, Kings Tower  
16 Shi Shan Road  
Suzhou New District, PRC 215011  
Tel: 86-512-825-3191  
Fax: 86-512-825-0417

### Colombia

Solutia Colombia Ltda.  
Carrera 18 Nro. 86-A 14  
Oficina 302  
Bogota, Colombia  
Tel: 571-296-0216  
Fax: 571-296-0218

### India

Solutia Chemicals India Pvt. Ltd.  
205-207, "Midas" Sahar Plaza Complex  
Andheri-Kurla Road  
Andheri (East),  
Mumbai 400 059 India  
Tel: 91-22-830-2860  
Fax: 91-22-830-2859

### Japan

Solutia Japan Ltd.  
Shinkawa Sanko Building  
Second Floor  
1-3-17, Shinkawa, Chuo-ku  
Tokyo 104-0033, Japan  
Tel: (03) 3523 2080  
Fax: (03) 3523 2070

### Korea

Solutia Korea Ltd.  
3rd Floor, Anglican Church Building  
3-7, Jeong-dong, Joong-gu  
Seoul 100-120, Korea  
Tel: 82-2-736-7112  
Fax: 82-2-739-5049

### Malaysia

Solutia Hong Kong Ltd.  
Malaysia Branch  
12th Floor (1309-B)  
Kelana Parkview Tower  
No. 1 Jalan SS 6/2  
Kelana Jaya  
47301 Petaling Jaya  
Selangor, Malaysia  
Tel: 60-3-7804-5766  
Fax: 60-3-7804-4067

### Mexico

Solutia Mexico, S. de R.L. de C.V.  
Edificio Torre Esmeralda  
Blvd. Manuel Avila Camacho  
No. 40 Piso 12  
Colonia Lomas de Chapultepec  
11000 Mexico, D.F.  
Tel: 525-202-5600  
Fax: 525-202-5232

### Singapore

Solutia Singapore Pte. Ltd.  
101 Thomson Road  
#19-01/02 United Square  
Singapore 307591  
Tel: 65-357-6100  
Fax: 65-357-6194

### Taiwan

Solutia Taiwan Inc.  
2F, 124 Chung Cheng Road  
Shihlin District, Taipei  
Taiwan, R.O.C.  
Tel: 886-2-2835-1666  
Fax: 886-2-8866-2703

### Thailand

193/80 Lake Rajada Building  
19th Floor  
Ratchadapisek Road, Klongtoey  
Bangkok 10110 Thailand  
Tel: 662-264-0505  
Fax: 662-264-0499

### Venezuela

Solutia Venezuela SRL  
Av. Francisco de Miranda  
Centro Lido, Torre D  
Piso 4 Ofic. 40-HQ  
Global Workplaces Urb. El Rosal  
Caracas, Venezuela  
Tel: 58-212-9056370  
Fax: 58-212-9056368

Visit our Web site at  
[www.therminol.com](http://www.therminol.com).

**SAFETY AND HANDLING:** Material Safety Data Sheets may be obtained from Environmental Operations, Industrial Products, Solutia Inc. Heat transfer fluids are intended only for indirect heating purposes. Under no circumstances should this product contact or in any way contaminate food, animal feed, food products, food packaging materials, food chemicals, pharmaceuticals or any items which may directly or indirectly be ultimately ingested by humans. Any contact may contaminate these items to the extent that their destruction may be required. Precautions against ignitions and fires should be taken with this product.

**NOTICE:** Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, Solutia Inc. makes no representations or warranties as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Solutia Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon Information or the product to which Information refers. Nothing contained herein is to be construed as a recommendation to use any product, process, equipment or formulation in conflict with any patent, and Solutia Inc. makes no representation or warranty, express or implied, that the use thereof will not infringe any patent. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.



*Solutions for a better life.*

Solutia  
P.O. Box 66760  
St. Louis, MO 63166-6760  
Tel: (314) 674-1000

Litho in U.S.A.  
© Registered Trademark of Solutia Inc.  
© Solutia Inc., 2001. All rights reserved.