

# THERMINOL® 66

Heat Transfer Fluids By



Applied Chemistry, Creative Solutions

High Performance  
Highly Stable  
Heat Transfer Fluid

0°C to

345°C



+400°C

+350°C

+300°C

+250°C

+200°C

+150°C

+100°C

+50°C

+0°C

-50°C

-100°C

Therminol 66 is a high performance highly stable synthetic heat transfer fluid offering extended life and very low top-up rates resulting in reduced running costs and minimal downtime for operations at temperatures up to 345°C.

Therminol 66 derives its outstanding performance from the unique stability of the polyphenyl structure.

Intended for use in systems operating at or near atmospheric pressure, Therminol 66 offers potential savings in both capital and operating costs.

Therminol 66 is in use world-wide for many process heating and waste heat recovery applications: resin manufacture, phthalic anhydride distillation, polyester film and fibre production, deodorising fatty acids, phenol production, polyamide polymerisation and extrusion, preheating combustion air in the steel and petrochemical furnaces.

## Thermal Stability

The thermal stability of a heat transfer fluid is one of the most important considerations in the selection of a fluid for operation under specific heat transfer conditions. Therminol 66 has made its reputation for its outstanding stability in operation.

Fluid decomposition, both for mineral oil and synthetic hydrocarbon based heat transfer fluids, generally results in the formation of volatile products (low boilers) and polymeric high viscosity fractions (high boilers). The relative proportion of low and high boiler formation and solubility of the high boiling fractions may vary widely, and are critical factors when evaluating fluid performance, predicting top-up costs and the overall risk of deposits or coking.

**The chemical composition of Therminol 66 has been carefully selected to minimise the formation of low boilers and eliminate the risk of insoluble high boiler formation and fouling, provided proper attention is given to system design, and operation is within the maximum bulk and film temperatures specified below.**

## Typical Physical, Chemical and Thermal Properties of Therminol 66

Composition	Hydrogenated terphenyl	
Appearance	Clear pale yellow liquid	
Max. bulk temperature	345°C	
Max. film temperature	375°C	
Kinematic viscosity @ 40°C	DIN 51562 - 1	29.64 mm <sup>2</sup> /s (cSt)
Density @ 15°C	DIN 51757	1011 kg/m <sup>3</sup>
Flash point (Closed cup)	DIN EN 22719	170°C
Fire point	ISO 2592	216°C
Autoignition temperature	DIN 51794	399°C
Pour point	ISO 3016	-32°C
Boiling point @ 1013 mbar	359°C	
Coefficient of thermal expansion	0.0009/°C	
Moisture content	DIN 51777 - 1	< 150 ppm
Total acidity	DIN 51558 - 1	< 0.02 mg KOH/g
Chlorine content	DIN 51577 - 3	< 10 ppm
Copper corrosion	EN ISO 2160	<< 1a
Average molecular weight	252	

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

# Properties of Therminol® 66 vs Temperatures

Temperature °C	Density kg/m³	Thermal Conductivity W/m.K	Heat Capacity kJ/kg.K	Viscosity		Vapour pressure (absolute) kPa*
				Dynamic mPa.s	Kinematic mm²/s**	
0	1021.5	0.118	1.495	1324.87	1297.01	-
10	1014.9	0.118	1.529	344.26	339.20	-
20	1008.4	0.118	1.562	123.47	122.45	-
30	1001.8	0.117	1.596	55.60	55.51	-
40	995.2	0.117	1.630	29.50	29.64	-
50	988.6	0.116	1.665	17.64	17.84	-
60	981.9	0.116	1.699	11.53	11.74	-
70	975.2	0.115	1.733	8.06	8.26	0.01
80	968.5	0.115	1.768	5.93	6.12	0.02
90	961.8	0.114	1.803	4.55	4.73	0.03
100	955.0	0.114	1.837	3.60	3.77	0.05
110	948.2	0.113	1.873	2.92	3.08	0.08
120	941.4	0.112	1.908	2.42	2.58	0.12
130	934.5	0.111	1.943	2.05	2.19	0.18
140	927.6	0.111	1.978	1.75	1.89	0.27
150	920.6	0.110	2.014	1.52	1.65	0.40
160	913.6	0.109	2.050	1.34	1.46	0.58
170	906.6	0.108	2.086	1.18	1.30	0.83
180	899.5	0.107	2.122	1.06	1.17	1.17
190	892.3	0.107	2.158	0.95	1.06	1.62
200	885.1	0.106	2.195	0.86	0.97	2.23
210	877.8	0.105	2.231	0.78	0.89	3.02
220	870.4	0.104	2.268	0.72	0.82	4.06
230	863.0	0.103	2.305	0.66	0.77	5.39
240	855.5	0.102	2.342	0.61	0.71	7.10
250	847.9	0.100	2.379	0.57	0.67	9.25
260	840.3	0.099	2.417	0.53	0.63	11.95
270	832.5	0.098	2.455	0.49	0.59	15.31
280	824.6	0.097	2.492	0.46	0.56	19.46
290	816.6	0.096	2.531	0.44	0.54	24.55
300	808.5	0.095	2.569	0.41	0.51	30.73
310	800.3	0.093	2.608	0.39	0.49	38.22
320	792.0	0.092	2.647	0.37	0.47	47.20
330	783.5	0.091	2.686	0.35	0.45	57.94
340	774.8	0.089	2.726	0.34	0.43	70.68
350	765.9	0.088	2.766	0.32	0.42	85.74
360	756.9	0.086	2.806	0.31	0.41	103.42
370	747.7	0.085	2.847	0.30	0.39	124.09
380	738.2	0.084	2.889	0.28	0.38	148.13

\* 1 bar = 100 kPa - \*\* 1 mm²/s = 1 cSt

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## Physical Property Formulae

$$\text{Density (kg/m}^3\text{)} = -0.614254 * T (^{\circ}\text{C}) - 0.000321 * T^2 (^{\circ}\text{C}) + 1020.62$$

$$\text{Heat capacity (kJ/kg.K)} = 0.003313 * T (^{\circ}\text{C}) + 0.0000008970785 * T^2 (^{\circ}\text{C}) + 1.496005$$

$$\text{Thermal Conductivity (W/m.K)} = -0.000033 * T (^{\circ}\text{C}) - 0.00000015 * T^2 (^{\circ}\text{C}) + 0.118294$$

$$\text{Kinematic Viscosity (mm}^2\text{/s)} = e^{\left(\frac{586.375}{T(^{\circ}\text{C})+62.5} - 2.2809\right)}$$

$$\text{Vapour Pressure (kPa)} = e^{\left(\frac{-9094.51}{T(^{\circ}\text{C})+340} + 17.6371\right)}$$

## The Therminol® Range

Therminol 66 is one of the Solutia synthetic heat transfer fluids covering an operating range from -85°C to 400°C, suitable for most process heating and cooling or heat recovery applications, and capable of operation at or near atmospheric pressure within their recommended operating temperature range.

As a user's process temperature demands change there is always a Therminol fluid capable of meeting the new requirements. In addition, the Therminol fluids are often interchangeable allowing conversion by a simple top-up procedure where this is preferred.

Solutia also has a standard DP-DPO eutectic, Therminol VP1 .

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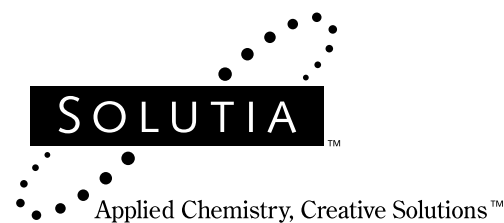
## Quality Control Certification

Solutia has obtained **ISO 9002/BS 5750** quality control certification (1/6/1989) reference n° **FM 1970** for Therminol 66. This registration means that plant procedures, quality control systems, material sampling, product storage, handling, packaging, shipping, product literature and characteristic data, record keeping and other company procedures are in line with the quality requirements of the ISO 9002 standards and its other national equivalents.

**This is your quality assurance.**

## Health, Safety and Environmental Information

Please contact us for the Material Safety Data Sheet, or if any other information concerning health, safety and environmental issues is required during the filling or operation of your heat transfer system with this product.



### Europe

Solutia Europe S.A./N.V.

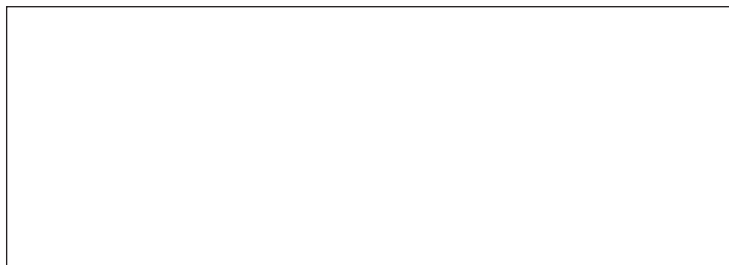
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**Please contact us for more information :**



**Therminol is a trademark of Solutia. Therminol has now been adopted as a world-wide brand for the Solutia Heat Transfer Fluid range. Fluids known previously under the Santotherm and Gilotherm brands are identical in composition and performance to the corresponding Therminol brand fluids.**

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