

THERMINOL® RD

Heat Transfer Fluids By

SOLUTIA™



Optimum Cost Performance
Medium Temperature
Operation
Heat Transfer Fluid

-20°C to

270°C



+400°C

+350°C

+300°C

+250°C

+200°C

+150°C

+100°C

+50°C

+0°C

-50°C

-100°C

Therminol RD is a low viscosity heat transfer fluid particularly recommended for indirect process heating at medium temperatures up to 250°C - 270°C temperature range. Low temperature pumpability is excellent down to -20°C.

Due to its excellent viscosity Therminol RD is in use world-wide for many process heating applications, like resin manufacture, phthalic anhydride distillation, deodorising fatty acids and extrusions.

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.

Fluid decomposition, for both 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 the solubility of the high boiling fraction, 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 RD 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 within the maximum bulk and film temperatures specified below.

Typical Physical, Chemical and Thermal Properties of Therminol RD

Composition		Synthetic hydrocarbon mixture
Appearance		Clear liquid
Max. bulk temperature		270°C
Max. film temperature		300°C
Kinematic viscosity @ 40°C	DIN 51562 - 1	5.91 mm ² /s (cSt)
Density @ 15°C	DIN 51757	872 kg/m ³
Flash point	DIN 51376	120°C
Fire point	ISO 2592	125°C
Autoignition temperature	DIN 51794	395°C
Pour point	ISO 3016	-55°C
Boiling point @ 1013 mbar		283°C
Coefficient of thermal expansion		0.001244/°C
Moisture content	DIN 51777 - 1	< 250 ppm
Total acidity	DIN 51558 - 1	< 0.2 mg KOH/g
Chlorine content	DIN 51577 - 3	< 0.005 %
Copper corrosion	EN ISO 2160	<< 1a
Average molecular weight		240

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® RD 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**	
-30	905	0.124	1.61	560.64	619.49	-
-20	897	0.123	1.65	159.35	177.65	-
-10	890	0.122	1.69	62.41	70.12	-
0	883	0.121	1.73	30.17	34.17	-
10	876	0.120	1.77	16.89	19.28	-
20	869	0.119	1.81	10.51	12.09	-
30	862	0.118	1.85	7.07	8.20	-
40	855	0.117	1.89	5.05	5.91	-
50	848	0.116	1.93	3.79	4.47	-
60	841	0.115	1.98	2.95	3.51	-
70	834	0.114	2.02	2.37	2.84	-
80	827	0.113	2.06	1.95	2.36	-
90	820	0.112	2.10	1.64	2.00	-
100	813	0.111	2.14	1.40	1.72	-
110	806	0.110	2.18	1.22	1.51	-
120	799	0.109	2.24	1.07	1.34	-
130	792	0.108	2.28	0.95	1.20	1
140	785	0.107	2.33	0.86	1.09	1
150	778	0.106	2.37	0.77	0.99	1
160	772	0.105	2.42	0.70	0.91	2
170	765	0.104	2.46	0.64	0.84	3
180	758	0.103	2.51	0.60	0.79	4
190	751	0.102	2.55	0.56	0.74	6
200	744	0.101	2.60	0.51	0.69	9
210	738	0.100	2.65	0.48	0.65	13
220	731	0.099	2.69	0.45	0.62	17
230	724	0.098	2.74	0.43	0.59	24
240	717	0.097	2.79	0.40	0.56	32
250	711	0.096	2.83	0.38	0.54	43
260	704	0.095	2.88	0.36	0.51	56
270	697	0.094	2.93	0.34	0.49	73

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

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Physical Property Formulae

$$\text{Density (kg/m}^3\text{)} = -0.71 * T(\text{°C}) + 0.000079 * T^2 (\text{°C}) + 883.2$$

$$\text{Heat Capacity (kJ/kg.K)} = 0.00406 * T (\text{°C}) + 0.0000014 * T^2 (\text{°C}) + 1.7313$$

$$\text{Thermal Conductivity (W/m.K)} = -1.0 * 10^{-4} * T (\text{°C}) - 2.1 * 10^{-8} * T^2 (\text{°C}) + 0.121$$

$$\text{Kinematic Viscosity (mm}^2\text{/s)} = e^{\left(\frac{495.8}{T(\text{°C})+88.2} - 2.09\right)}$$

$$\text{Vapour Pressure (kPa)} = 0.001 * e^{\left(\frac{-7710.73}{T(\text{°C})+274.77} + 25.35\right)}$$

The Therminol® Range

Therminol RD is one of the Solutia synthetic heat transfer fluids covering an operating range from -85°C to +400°C, suitable for most process heating or waste 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, 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 VP-1.

Asia

Solutia Singapore Pte. Ltd.

101 Thomson Road - #19-00 United Square Singapore
307591

Tel.: (+65) 355 7231 - Fax: (+65) 254 3138

Latin America

Solutia Brasil Ltda.

Rua Gomes de Carvalho 1306 - 60 andar - conj. 61 e 62

CEP : 04547-005 • Vila Olímpia - Sao Paulo, SP, Brasil

Phone: (+55) 11-5087 3000 - Fax: (+55) 11-5087 3030

North America

Solutia Inc.

10300 Olive Boulevard - PO Box 66760

St Louis, MO 63166-6760 - USA

Tel.: (+1) 314 674 10 00

People's Republic of China

Solutia Chemical Co. Ltd., Suzhou

9th floor, Kings Tower

16 Shi Shan Road - Suzhou New District - Suzhou, PRC 215011

Phone: (+86) 512 8258167 - Fax: (+86) 512 8250417

Quality Management

All our manufacturing units have obtained ISO 9002 quality control certification. 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 the Solutia Europe/Africa HQ for the Material Safety Data Sheet, or if any other information concerning health, safety and environmental issues is required during filling or operation of your heat transfer system with this product.



Europe

Solutia Europe S.A./N.V.

Rue Laid Burniat 3 - Parc Scientifique - Fleming

B-1348 Louvain-la-Neuve (Sud) - Belgium

Tel.: (+32) 10 48 15 47 - Fax: (+32) 10 48 14 86

<http://www.solutia.com>

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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