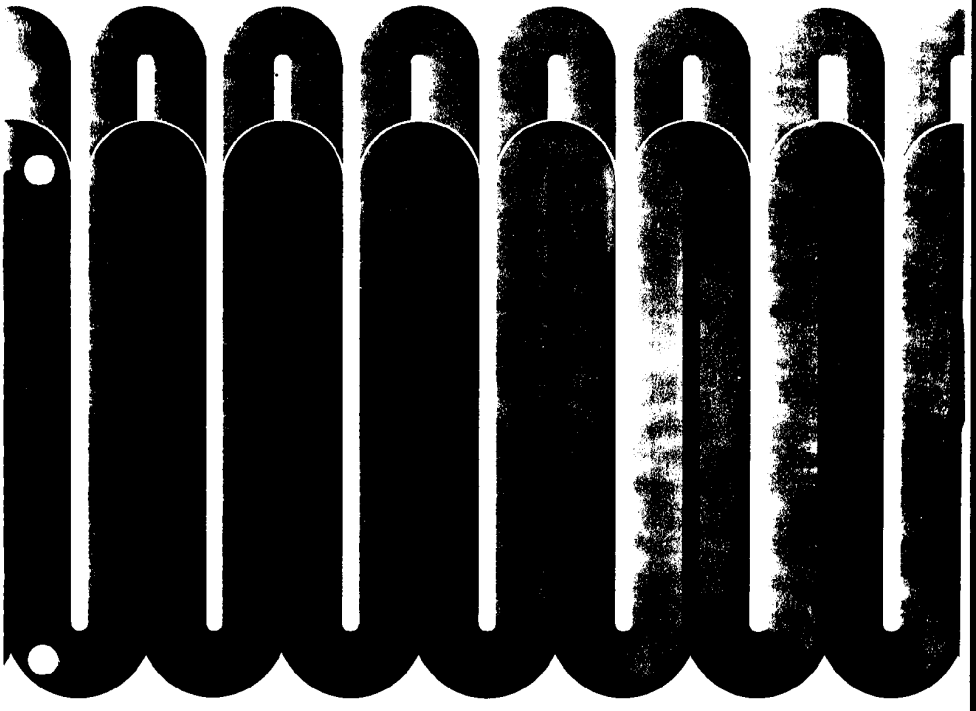
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THERMINOL 55

LOW COST • LIQUID PHASE • HEAT TRANSFER FLUID • 0°F. TO 600°F.



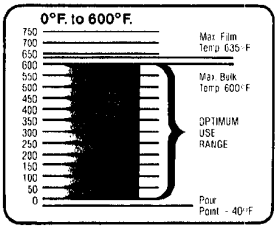
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THERMINOL

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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: Nothing contained herein is to be construed as a recommendation to use any product in conflict with any patent. MONSANTO MAKES NO WARRANTIES AS TO THE FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY OF ANY PRODUCT REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations, and disclaims all liability for any resulting loss or damage.

In certain countries of Western Europe and the Far East, Monsanto sells Therminol Heat Transfer Fluids under the brand name "Santotherm"* heat transfer fluids. Corresponding Therminol and Santotherm fluids are identical in composition.

Therminol* 55 synthetic heat transfer fluid is low in cost and one of the most popular heat transfer products available for use at moderate operating temperatures.

Therminol 55 has an operating range of 0°F. to 600°F. and a pour point of −40°F. It offers good viscosity characteristics (pumpable to −5°F.), high specific heat and thermal conductivity.

Therminol 55 fluid is designed for use in non-pressurized indirect heating systems. It delivers efficient, dependable process heat with no need for high pressures or costly venting equipment.

Therminol 55 is not classified as a fire-resistant heat transfer fluid. Consequently, the use of protective devices may be required to minimize fire risk. The insurer of your property should be consulted relative to this matter.

To minimize fluid oxidation systems utilizing Therminol 55 fluid should be blanketed with an inert atmosphere. A system relief valve should also be provided.

Therminol 55 offers long service life within its recommended operating temperature range, and is non-corrosive to metals commonly used in the design of heat transfer systems.

TYPICAL PROPERTIES*

Composition	Synthetic Hydrocarbon Mixture
Appearance	Clear Yellow Liquid
Specific Gravity, 60°/60°F.	0.880-.910
Kinematic Viscosity @ 100°F.	20.5-34.1 cSt
Moisture Content	250 ppm, max.
Pour Point	−40°F. (−40°C.)
Flash Point, COC	350°F. (177°C.)
Fire Point, COC	410°F. (210°C.)
AIT (ASTM D-2155)	675°F. (357°C.)
Coefficient of Thermal Expansion	0.00049°F.$^{-1}$ (0.00087°C.$^{-1}$)
Boiling Range	
10%	635°F. (335°C.)
90%	734°F. (390°C.)
Heat of Vaporization (Calculated)	84.4 BTU/LB. (46.9 cal/g.)

*This data is based upon samples tested in our laboratory and is not guaranteed for all samples. Write us for complete sales specifications for Therminol 55 fluid

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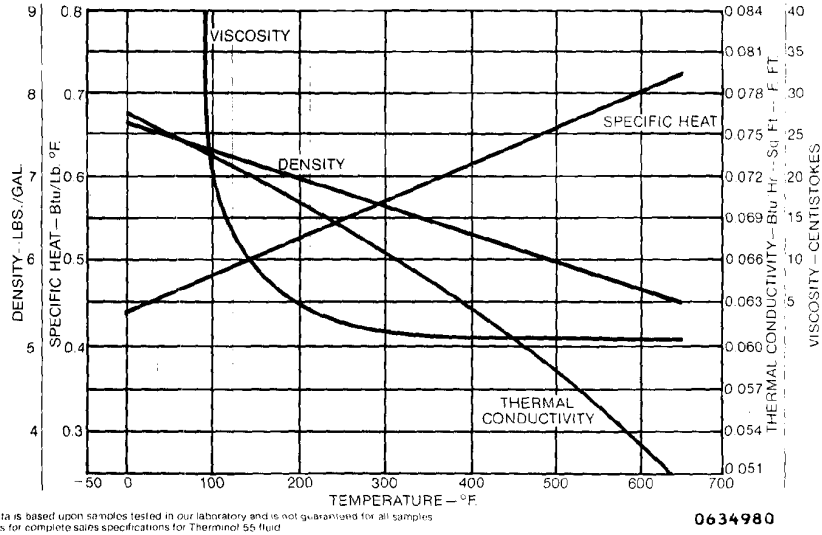
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Temperature		Density			Specific Heat		Thermal Conductivity		Viscosity		Vapor Pressure	
°F.	°C.	lb/gal	lb/ft³	g/ml	BTU/ lb. °F.	Cal/g °C.	BTU/ hr-ft°F.	kcal/ hr-m°C.	Absolute lb/hr-ft	Kinematic cSt	torr (mm Hg)	g/cm²
0	−18	7.57	56.6	0.907	0.431	0.431	0.0764	0.1137	3070	1400		
50	10	7.41	55.5	0.888	0.453	0.453	0.0749	0.1115	263	122		
100	38	7.26	54.3	0.870	0.476	0.476	0.0733	0.1091	56.6	26.9		
150	66	7.10	53.1	0.851	0.498	0.498	0.0717	0.1067	20.3	9.85		
200	93	6.95	52.0	0.833	0.521	0.521	0.0701	0.1043	9.77	4.85	0.2	0.27
250	121	6.79	50.8	0.814	0.543	0.543	0.0684	0.1018	5.62	2.86	0.7	0.95
300	149	6.64	49.7	0.795	0.566	0.566	0.0666	0.0991	3.64	1.89	2.3	3.12
350	177	6.48	48.5	0.777	0.588	0.588	0.0647	0.0963	2.55	1.36	6.9	9.38
400	204	6.33	47.3	0.758	0.611	0.611	0.0627	0.0933	1.90	1.03	18.2	24.7
450	232	6.17	46.2	0.740	0.633	0.633	0.0606	0.0902	1.47	0.82	43	59
500	260	6.02	45.0	0.721	0.656	0.656	0.0583	0.0868	1.19	0.68	93	126
550	288	5.86	43.9	0.702	0.678	0.678	0.0559	0.0832	0.98	0.58	187	254
600†	316†	5.71	42.7	0.684	0.700	0.700	0.0533	0.0793	0.83	0.50	352	479
650	343	5.55	41.5	0.665	0.723	0.723	0.0505	0.0751	0.72	0.45	626	851

†Maximum recommended bulk temperature 600°F (316°C)

*This data is based upon samples tested in our laboratory and is not guaranteed for samples. Write us for complete sales specifications for Therminol 55 fluid.



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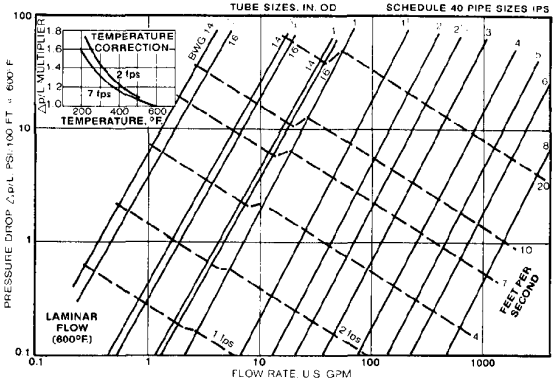
SAFETY AND HANDLING

Therminol 55 heat transfer fluid is practically non-toxic by ingestion in single doses and by single dermal applications. It is a slight eye irritant and produces only a trace of skin irritation on prolonged contact. Although no special handling precautions appear necessary, as with any industrial chemical good industrial practices and personal hygiene should be observed in handling to minimize exposure. In case of contact, remove chemical by flushing eyes or skin with plenty of water.

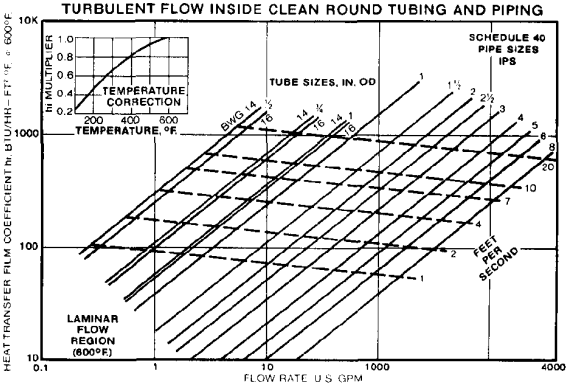
Because of its low volatility, Therminol 55 does not present an inhalation hazard at ambient temperatures such as those encountered in transferring cold fluid from shipping containers to the heat transfer system. Vapor emitted by Therminol 55 heated to elevated temperatures may be mildly irritating and cause discomfort on prolonged exposure. In heat transfer installations, the fluid is used in a closed, non-pressurized system free from leaks and with the expansion tank vent trapped so as to condense any vapors. Consequently, there should be little or no opportunity for workers to come in contact with vapors.

While Therminol 55 poses no serious problems with respect to the environment, as a concerned supplier to industry, Monsanto urges the user to maintain a tight system, to correct leakage promptly, and to exercise care in the handling and disposal of this and all other such products. A tight maintenance program not only protects the environment, but keeps employes comfortable, the working area clean, and the system running smoothly.

THERMINOL® 55— PRESSURE DROP*
TURBULENT FLOW INSIDE CLEAN ROUND PIPING AND TUBING



THERMINOL® 55—HEAT TRANSFER COEFFICIENTS*
TURBULENT FLOW INSIDE CLEAN ROUND TUBING AND PIPING



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