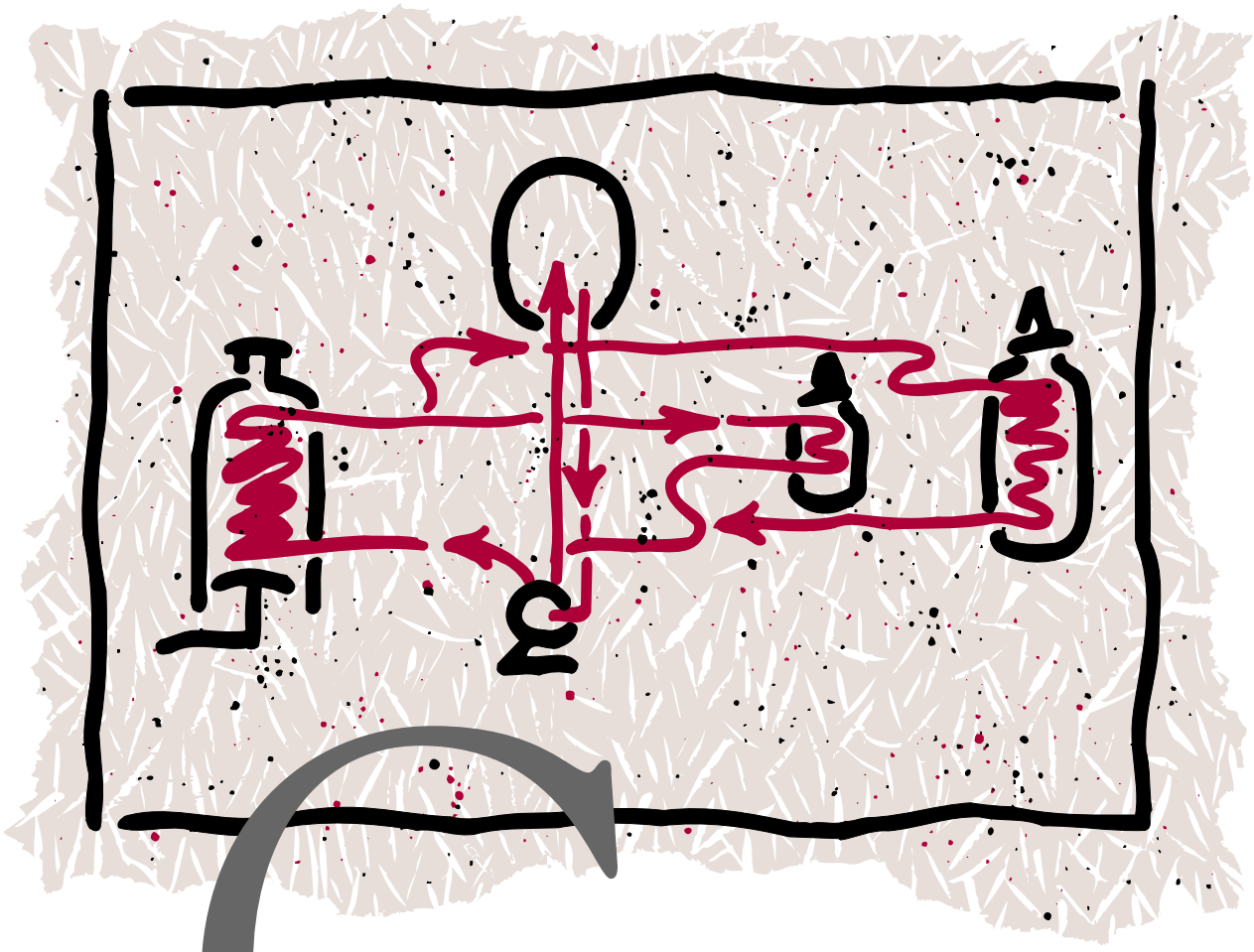
DOWTHERM G
Heat Transfer Fluid



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Product Technical Data

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DOWTHERM G HEAT TRANSFER FLUID

DOWTHERM G fluid provides high performance with low vapor pressure

DOWTHERM* G heat transfer fluid is a mixture of di- and tri-aryl compounds that provides excellent performance in liquid phase heat transfer systems operating between 20°F and 675°F (-6°C to 360°C). DOWTHERM G fluid is a highly stable low pressure fluid which can minimize problems resulting from accidental overheating caused by flame impingement, improper heater firing or inadequate circulation.

Start-up and shutdown problems are minimized by the fluid's excellent flow characteristics at low temperatures. DOWTHERM G heat transfer fluid has high flash, fire and autoignition points, and presents no fire hazard at ambient temperatures.

In addition to the performance advantages of DOWTHERM G fluid, Dow's supporting services are unequaled. They include technical backup in the design phase and during operation. Moreover, free analytical testing is provided to monitor fluid condition.

When it is time to change out your DOWTHERM G heat transfer fluid, Dow's fluid credit program allows you to return the old fluid for credit toward the purchase of your new fluid charge.

For Information About Our Full Line of Fluids…

To learn more about the full line of heat transfer fluids manufactured or distributed by Dow — including DOWTHERM synthetic organic, SYLTHERM† silicone and DOWTHERM, DOWFROST*, and DOWCAL* glycol-based fluids — request our product line guide. Call the number for your area listed on the back of this brochure.

*Trademark of The Dow Chemical Company

†Trademark of Dow Corning Corporation

Fluid Selection Criteria

Stability

DOWTHERM G fluid offers good thermal stability at temperatures up to 675°F (360°C). The maximum recommended film temperature is 725°F (385°C).

Freeze Point (crystal point/ pumpability)

DOWTHERM G fluid is a mixture of compounds and does not exhibit a finite freezing point. The fluid can either subcool or develop crystals below 40°F (4°C). If the fluid is circulated, it will remain pumpable down to very low temperatures. The minimum pumpability limit of a fluid is defined by many pump manufacturers as the temperature at which the fluid reaches a viscosity of 1000 centipoise (1000 mPa•s).

Vapor Pressure

DOWTHERM G fluid may be used as a liquid heat transfer media up to 675°F (360°C) with a pressure of only 48.8 psig (3.4 bar).

Thermal Stability

The thermal stability of a heat transfer fluid is dependent not only on its chemical structure but also on the design and operating temperature profile of the system in which it is used. Maximum life for a fluid can be obtained by following sound engineering practices in the design of the heat transfer system. Three key areas of focus are: designing and operating the heater and/or energy recovery unit, preventing chemical contamination, and eliminating contact of the fluid with air.

Heater Design and Operation

Poor design and/or operation of the fired heater can cause overheating resulting in excessive thermal degradation of the fluid. When heaters are operated at high temperatures, they are designed for minimum liquid velocities of 6 feet per second (2 m/s); a range of 6–12 feet per second (2–4 m/s) should cover most cases. The actual velocity selected will depend on an economic balance between the cost of circulation and heat transfer surface. Operating limitations are usually placed on heat flux by the equipment manufacturer. This heat flux is determined for a maximum film temperature by the operating conditions of the particular unit. Some problem areas to be avoided include:

1. Flame impingement.

2. Operating the heater above its rated capacity.

3. Modifying the fuel-to-air mixing procedure to change the flame height and pattern. This can yield higher flame and gas temperatures together with higher heat flux.

4. Low fluid velocity—This can cause high heat flux areas resulting in excessive heat transfer fluid film temperatures.

The manufacturer of the fired heater should be the primary contact in supplying you with the proper equipment for your heat transfer system needs.

Chemical Contamination

A primary concern regarding chemical contaminants in a heat transfer fluid system is their relatively poor thermal stability at elevated temperatures. The thermal degradation of chemical contaminants may be very rapid which may lead to fouling of heat transfer surfaces and corrosion of system components. The severity and nature of the corrosion will depend upon the amount and type of contaminant introduced into the system.

Air Oxidation

Organic heat transfer fluids operated at elevated temperatures are susceptible to air oxidation. The degree of oxidation and the rate of reaction is dependent upon the temperature and the amount of air mixing. Undesirable by-products of this reaction may include carboxylic acids which would likely result in system operating problems.

Preventive measures should be taken to ensure that air is eliminated from the system prior to bringing the heat transfer fluid up to operating temperatures. A positive pressure inert gas blanket should be maintained at all times on the expansion tank during system operation.

Units can be designed to operate at higher temperatures than those presently recommended in cases where the greater replacement costs of DOWTHERM G fluid—resulting from its increased decomposition rate—can be economically justified. In such units, adequate provision must be made for good circulation, lower heat fluxes, and frequent or continuous purification.

Corrosivity

DOWTHERM G heat transfer fluid is noncorrosive toward common metals and alloys. Even at the high temperatures involved, equipment usually exhibits excellent service life.

Steel is used predominantly, although low alloy steels, stainless steels, Monel alloy, etc., are also used in miscellaneous pieces of equipment and instruments.

Most corrosion problems are caused by chemicals introduced into the system during cleaning or from process leaks. The severity and nature of the attack will depend upon the amounts and type of contamination involved.

When special materials of construction are used, extra precaution should be taken to avoid contaminating materials containing the following:

Construction Material	*Contaminant*
Austenitic Stainless Steel	*Chloride*
Nickel	*Sulfur*
Copper Alloys	*Ammonia*

Flammability

DOWTHERM G heat transfer fluid is a combustible material. It has a flash point of 280°F (138°C) and an autoignition temperature of 810°F (432°C) (A.S.T.M. Method E 659-78). Autoignition safety margin is an important consideration because planned and unplanned temperature excursions must be accommodated.

Vapor leaks to the atmosphere are sometimes encountered. Such leaks, however small, should not be tolerated because of the cost of replacing lost fluid. Experience has shown that leaking vapors have usually cooled well below the fire point and fire has rarely resulted.

Leaks from pipelines into insulation are potentially hazardous as they can lead to fires in the insulation. It has been found, for example, that leakage of organic materials into some types of insulation at elevated temperatures may result in spontaneous ignition due to auto-oxidation.

Vapors of DOWTHERM G fluid do not pose a serious flammability hazard at room temperature because the saturation concentration is far below the lower flammability limit making ignition unlikely. Flammable mists are, however, possible under unusual circumstances.

If used and maintained properly, installations employing DOWTHERM G fluid should present no unusual flammability hazards.

Health, Safety, and Environmental Considerations

A Material Safety Data Sheet (MSDS) for DOWTHERM G heat transfer fluid is available by calling the number listed on the back of this brochure. The MSDS contains complete health and safety information regarding the use of this product. Read and understand the MSDS before handling or otherwise using this product.

Provisions must be made to prevent significant discharge into public waters. The fluid is not recommended for use in food processing areas where potential leakage may occur.

Oral administration of DOWTHERM G fluid to laboratory animals has revealed a low order of systemic toxicity. The single dose oral LD50 is >2000 mg/kg for rats.

DOWTHERM G fluid is slightly irritating to the skin and eyes. However, prolonged and repeated contact with the skin should be avoided, and suitable eye protection should be worn wherever there are opportunities or eye contamination.

The potential for DOWTHERM G fluid to be absorbed through the skin in acutely toxic levels is low; its dermal LD50 is greater than 3160 mg/kg.

At room temperature, vapors are minimal due to physical properties of the fluid. At normal use temperatures, significant vapor concentrations or mists may be encountered due to leaks or spills. While vapors are not expected to be irritating to the upper respiratory tract, care should be taken to avoid exposure to high concentrations of vapor or mists.

When accidental or unusual conditions result in heavy concentrations of vapor or fume, workers should wear respiratory protection suitable for organic mists and vapors. Where there is a possibility of oxygen deficiency, workers should be equipped with air supplied masks or self-contained breathing apparatus. In normal operation, atmospheric contamination should be kept at levels where fluid odor is not discomforting to individuals.

Customer Service for Users of DOWTHERM G Heat Transfer Fluid

Fluid Analysis

The Dow Chemical Company and its global subsidiaries offer an analytical service for DOWTHERM G heat transfer fluid. It is recommended that users send a one-pint (0.5 liter) representative sample at least annually to:

North America & Pacific
The Dow Chemical Company
Larkin Lab/Thermal Fluids
1691 North Swede Road
Midland, Michigan 48674
United States of America

Europe
Dow Benelux NV
Testing Laboratory for SYLTHERM and DOWTHERM Fluids
Oude Maasweg 4
3197 KJ Rotterdam–Botlek
The Netherlands

Latin America
Dow Quimica S.A.
Fluid Analysis Service
1671, Alexandre Dumas
Santo Amaro–Sao Paulo–
Brazil 04717-903

This analysis gives a profile of fluid changes to help identify trouble from product contamination or thermal decomposition.

When a sample is taken from a hot system it should be cooled to below 100°F (40°C) before it is put into the shipping container. Cooling the sample below 100°F (40°C) will prevent the possibility of thermal burns to personnel; also, the fluid is then below its flash point. In addition, any low boilers will not flash and be lost from the sample. Cooling can be done by either a batch or continuous process. The batch method consists of isolating the hot sample of fluid from the system in a properly designed sample collector and then cooling it to below 100°F (40°C). After it is cooled, it can be withdrawn from the sampling collector into a container for shipment.

The continuous method consists of controlling the fluid at a very low rate through a steel or stainless steel cooling coil so as to maintain it at 100°F (40°C) or lower as it comes out of the end of the cooler into the sample collector. Before a sample is taken, the sampler should be thoroughly flushed. This initial fluid should be returned to the system or disposed of in a safe manner in compliance with all laws and regulations.

It is important that samples sent for analysis be representative of the charge in the unit. Ordinarily, samples should be taken from the main circulating line of a liquid system. Occasionally, additional samples may have to be taken from other parts of the system where specific problems exist. A detailed method for analyzing the fluid to determine its quality is available upon request.

Used heat transfer fluid which has been stored in drums or tanks should be sampled in such a fashion as to ensure a representative sample.

Fluid Return Program for DOWTHERM Fluids

In the unlikely event that you need to change out DOWTHERM G fluid, Dow offers a fluid return program. If analysis of a particular fluid sample reveals significant thermal degradation of the medium, the customer will be advised to return the fluid in his system to Dow. If the fluid is contaminated with organic materials of low thermal stability, it may not be acceptable for Dow processing and will not qualify for the return program. In this case, Dow will advise the customer that the fluid cannot be processed and therefore should not be returned to Dow. No material should be sent to Dow until the fluid analysis has been completed and the customer informed of the results.

If the analysis shows fluid change-out is necessary, the customer should order sufficient new material to recharge the system before sending the old fluid to Dow. Under the fluid return program, Dow will credit the customer for all usable material recovered.

The Dow fluid return program permits customers to minimize their heat transfer fluid investment, handling downtime and inventory, while assuring that replacement fluid is of the highest quality.

Before returning material for credit, contact Dow at the number for your area listed on the back of this brochure for details.

For further information, please contact your nearest Dow representative or call the number for your area listed on the back of this brochure. Ask for DOWTHERM G fluid.

Table 1—Physical Properties of DOWTHERM G Fluid[†]

Composition: Mixture of di- and tri-aryl compounds

Color: Clear to brown

Property	English Units	SI Units
Crystal Point	< 40°F	< 4°C
Atmospheric Reflux Boiling Point	552°F	289°C
Flash Point[1]	280°F	137°C
Autoignition Temperature[2]	810°F	432°C
Lower Flammable Limit[3]		
Vol. %	0.44% @ 392°F	0.44% @ 200°C
Upper Flammable Limit[3]		
Vol. %	5.2% @ 392°F	5.2% @ 200°C
Estimated Critical Constants		
T_c	1018°F	548°C
P_c	27.2 atm	27.56 bar
V_c	0.0505 ft^3/lb	3.150 l/kg
Average Molecular Weight	204.6	
Density at 75°F (25°C)	8.71 lb/gal	1043.0 kg/m^3

[†]Not to be construed as specifications
[1]Closed Cup
[2]ASTM E 659-78
[3]Estimated

Table 2—Saturated Liquid Properties of DOWTHERM G Fluid (English Units)

Temp. °F	*Specific Heat Btu/lb°F*	*Density lb/ft³*	*Therm. Cond. Btu/hr ft²(°F/ft)*	*Viscosity cP*	*Vapor Pressure psia*
30	0.352	66.45	0.0745	41.3	
40	0.356	66.18	0.0741	28.3	
50	0.361	65.91	0.0737	20.4	
60	0.366	65.64	0.0733	15.3	
70	0.370	65.38	0.0730	11.9	
80	0.375	65.11	0.0726	9.5	
90	0.380	64.84	0.0722	7.8	
100	0.384	64.57	0.0718	6.5	
110	0.389	64.30	0.0715	5.53	
120	0.394	64.03	0.0711	4.76	
130	0.398	63.76	0.0707	4.15	
140	0.403	63.49	0.0704	3.65	
150	0.407	63.22	0.0700	3.24	
160	0.412	62.95	0.0696	2.90	0.01
170	0.417	62.69	0.0692	2.61	0.01
180	0.421	62.42	0.0689	2.37	0.01
190	0.426	62.15	0.0685	2.15	0.02
200	0.431	61.88	0.0681	1.97	0.02
210	0.435	61.61	0.0678	1.81	0.03
220	0.440	61.34	0.0674	1.67	0.04
230	0.445	61.07	0.0670	1.55	0.05
240	0.449	60.80	0.0666	1.44	0.07
250	0.454	60.53	0.0663	1.34	0.09
260	0.459	60.26	0.0659	1.25	0.11
270	0.463	60.00	0.0655	1.17	0.14
280	0.468	59.73	0.0651	1.09	0.18
290	0.472	59.46	0.0648	1.03	0.23
300	0.477	59.19	0.0644	0.97	0.29
310	0.482	58.92	0.0640	0.91	0.35
320	0.486	58.65	0.0637	0.86	0.44
330	0.491	58.38	0.0633	0.81	0.54
340	0.496	58.11	0.0629	0.77	0.65
350	0.500	57.84	0.0625	0.73	0.79
360	0.505	57.57	0.0622	0.69	0.95
370	0.510	57.30	0.0618	0.66	1.14
380	0.514	57.04	0.0614	0.63	1.35
390	0.519	56.77	0.0611	0.60	1.61
400	0.524	56.50	0.0607	0.57	1.89
410	0.528	56.23	0.0603	0.55	2.22
420	0.533	55.96	0.0599	0.52	2.60
430	0.538	55.69	0.0596	0.50	3.03
440	0.542	55.42	0.0592	0.48	3.51
450	0.547	55.15	0.0588	0.46	4.06
460	0.551	54.88	0.0584	0.44	4.67
470	0.556	54.61	0.0581	0.42	5.36
480	0.561	54.35	0.0577	0.41	6.13
490	0.565	54.08	0.0573	0.39	6.98
500	0.570	53.81	0.0570	0.37	7.93
510	0.575	53.54	0.0566	0.36	8.98
520	0.579	53.27	0.0562	0.35	10.14
530	0.584	53.00	0.0558	0.34	11.41
540	0.589	52.73	0.0555	0.32	12.81
550	0.593	52.46	0.0551	0.31	14.35
560	0.598	52.19	0.0547	0.30	16.03
570	0.603	51.92	0.0543	0.29	17.86
580	0.607	51.66	0.0540	0.28	19.85
590	0.612	51.39	0.0536	0.27	22.01
600	0.616	51.12	0.0532	0.26	24.35
610	0.621	50.85	0.0529	0.26	26.89
620	0.626	50.58	0.0525	0.25	29.62
630	0.630	50.31	0.0521	0.24	32.57
640	0.635	50.04	0.0517	0.23	35.74
650	0.640	49.77	0.0514	0.23	39.15
660	0.644	49.50	0.0510	0.22	42.80
670	0.649	49.23	0.0506	0.21	46.70
680	0.654	48.97	0.0503	0.21	50.88
690	0.658	48.70	0.0499	0.20	55.33
700	0.663	48.43	0.0495	0.20	60.08
710	0.668	48.16	0.0491	0.19	65.12
720	0.672	47.89	0.0488	0.19	70.49
730	0.677	47.62	0.0484	0.18	76.18

Table 3—Saturation Properties of DOWTHERM G Fluid (SI Units)

Temp. °C	*Specific Heat kJ/kg K*	*Density kg/m³*	*Therm. Cond. W/m K*	*Viscosity mPa•s*	*Vapor Pressure bar*
-5	1.458	1066.2	0.1293	55.9	
0	1.476	1062.4	0.1288	38.2	
5	1.493	1058.5	0.1282	27.3	
10	1.511	1054.6	0.1276	20.4	
15	1.528	1050.7	0.1270	15.7	
20	1.546	1046.9	0.1264	12.5	
25	1.563	1043.0	0.1259	10.2	
30	1.581	1039.1	0.1253	8.4	
35	1.598	1035.3	0.1247	7.1	
40	1.616	1031.4	0.1241	6.1	
45	1.633	1027.5	0.1235	5.3	
50	1.651	1023.6	0.1230	4.6	
55	1.668	1019.8	0.1224	4.1	
60	1.686	1015.9	0.1218	3.65	
65	1.703	1012.0	0.1212	3.28	
70	1.720	1008.1	0.1206	2.96	
75	1.738	1004.3	0.1201	2.69	
80	1.755	1000.4	0.1195	2.46	
85	1.773	996.5	0.1189	2.26	
90	1.790	992.6	0.1183	2.08	
95	1.808	988.8	0.1177	1.92	
100	1.825	984.9	0.1172	1.78	
105	1.843	981.0	0.1166	1.66	
110	1.860	977.1	0.1160	1.55	
115	1.878	973.3	0.1154	1.45	
120	1.895	969.4	0.1148	1.36	0.01
125	1.913	965.5	0.1143	1.27	0.01
130	1.930	961.6	0.1137	1.20	0.01
135	1.948	957.8	0.1131	1.13	0.01
140	1.965	953.9	0.1125	1.07	0.01
145	1.983	950.0	0.1119	1.01	0.02
150	2.000	946.1	0.1114	0.96	0.02
155	2.018	942.3	0.1108	0.91	0.02
160	2.035	938.4	0.1102	0.86	0.03
165	2.053	934.5	0.1096	0.82	0.04
170	2.070	930.7	0.1090	0.78	0.04
175	2.088	926.8	0.1085	0.74	0.05
180	2.105	922.9	0.1079	0.71	0.06
185	2.123	919.0	0.1073	0.68	0.07
190	2.140	915.2	0.1067	0.65	0.08
195	2.158	911.3	0.1061	0.62	0.10
200	2.175	907.4	0.1056	0.59	0.11
205	2.193	903.5	0.1050	0.57	0.13
210	2.210	899.7	0.1044	0.55	0.15
215	2.228	895.8	0.1038	0.52	0.18
220	2.245	891.9	0.1032	0.50	0.20
225	2.263	888.0	0.1027	0.48	0.23
230	2.280	884.2	0.1021	0.47	0.26
235	2.297	880.3	0.1015	0.45	0.30
240	2.315	876.4	0.1009	0.43	0.34
245	2.332	872.5	0.1003	0.42	0.38
250	2.350	868.7	0.0998	0.40	0.43
255	2.367	864.8	0.0992	0.39	0.49
260	2.385	860.9	0.0986	0.37	0.55
265	2.402	857.0	0.0980	0.36	0.61
270	2.420	853.2	0.0974	0.35	0.68
275	2.437	849.3	0.0969	0.34	0.76
280	2.455	845.4	0.0963	0.33	0.84
285	2.472	841.6	0.0957	0.32	0.93
290	2.490	837.7	0.0951	0.31	1.03
295	2.507	833.8	0.0945	0.30	1.14
300	2.525	829.9	0.0940	0.29	1.25
305	2.542	826.1	0.0934	0.28	1.38
310	2.560	822.2	0.0928	0.27	1.51
315	2.577	818.3	0.0922	0.27	1.66
320	2.595	814.4	0.0916	0.26	1.81
325	2.612	810.6	0.0911	0.25	1.98
330	2.630	806.7	0.0905	0.24	2.16
335	2.647	802.8	0.0899	0.24	2.35
340	2.665	798.9	0.0893	0.23	2.55
345	2.682	795.1	0.0887	0.22	2.77
350	2.700	791.2	0.0882	0.22	3.00
355	2.717	787.3	0.0876	0.21	3.24
360	2.735	783.4	0.0870	0.21	3.50
365	2.752	779.6	0.0864	0.20	3.77
370	2.770	775.7	0.0858	0.20	4.07
375	2.787	771.8	0.0853	0.19	4.37
380	2.805	767.9	0.0847	0.19	4.70

Figure 1 — Thermal Conductivity of DOWTHERM G Fluid (English Units)

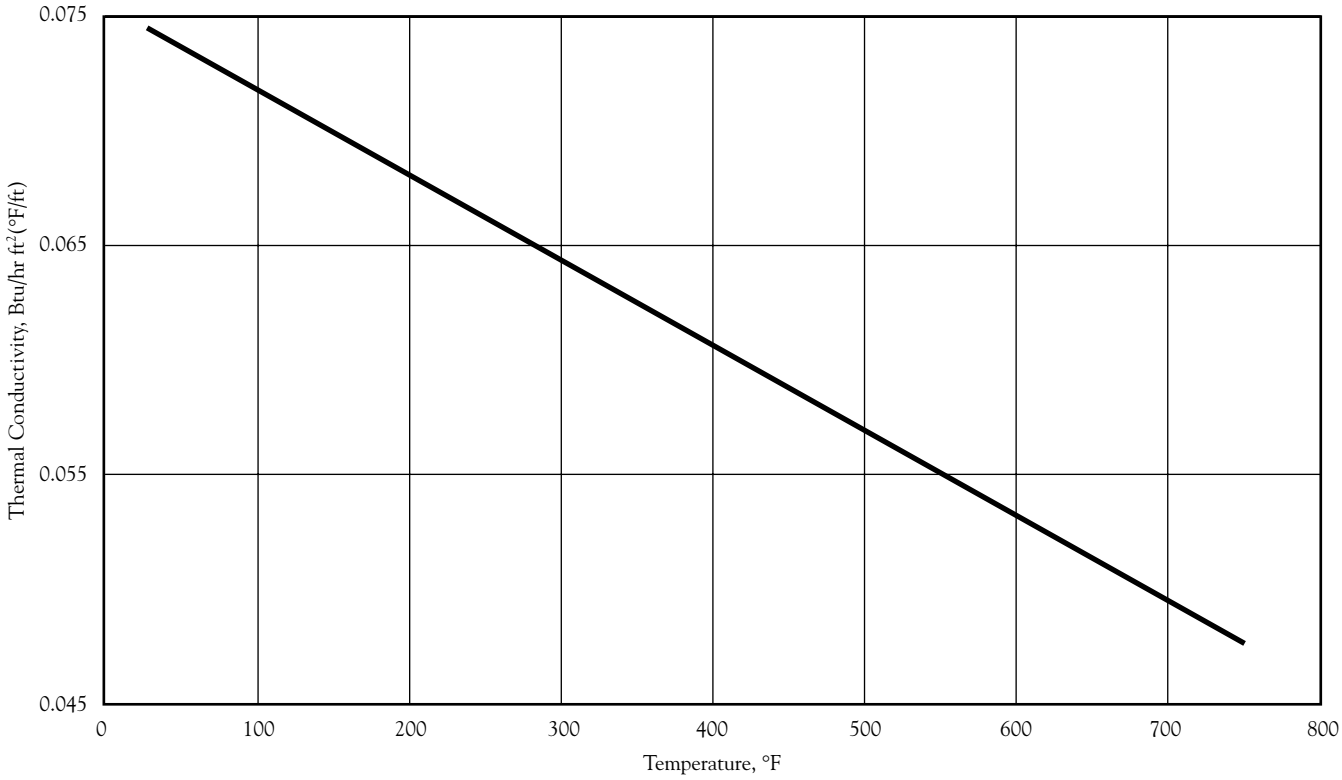


Figure 2 — Thermal Conductivity of DOWTHERM G Fluid (SI Units)

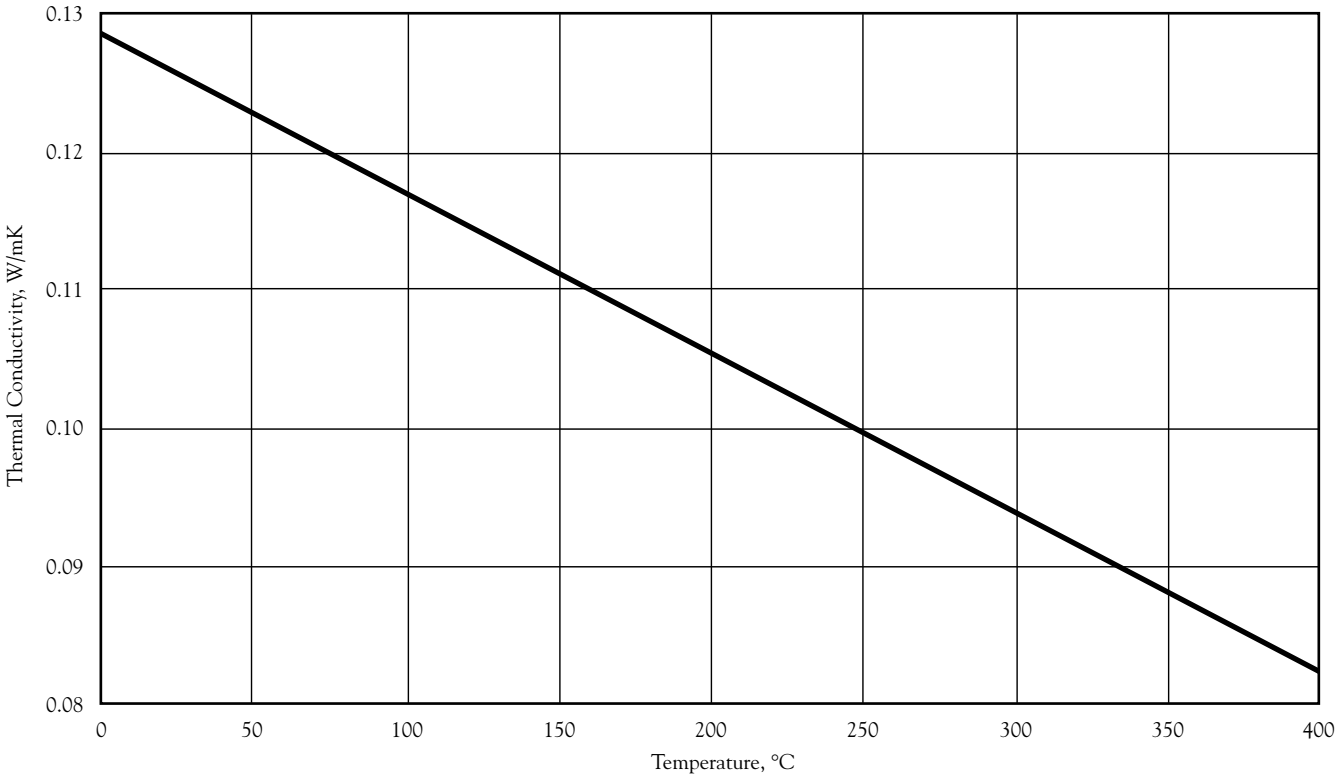


Figure 3—Calculated Heat of Vaporization of DOWTHERM G Fluid (English Units)

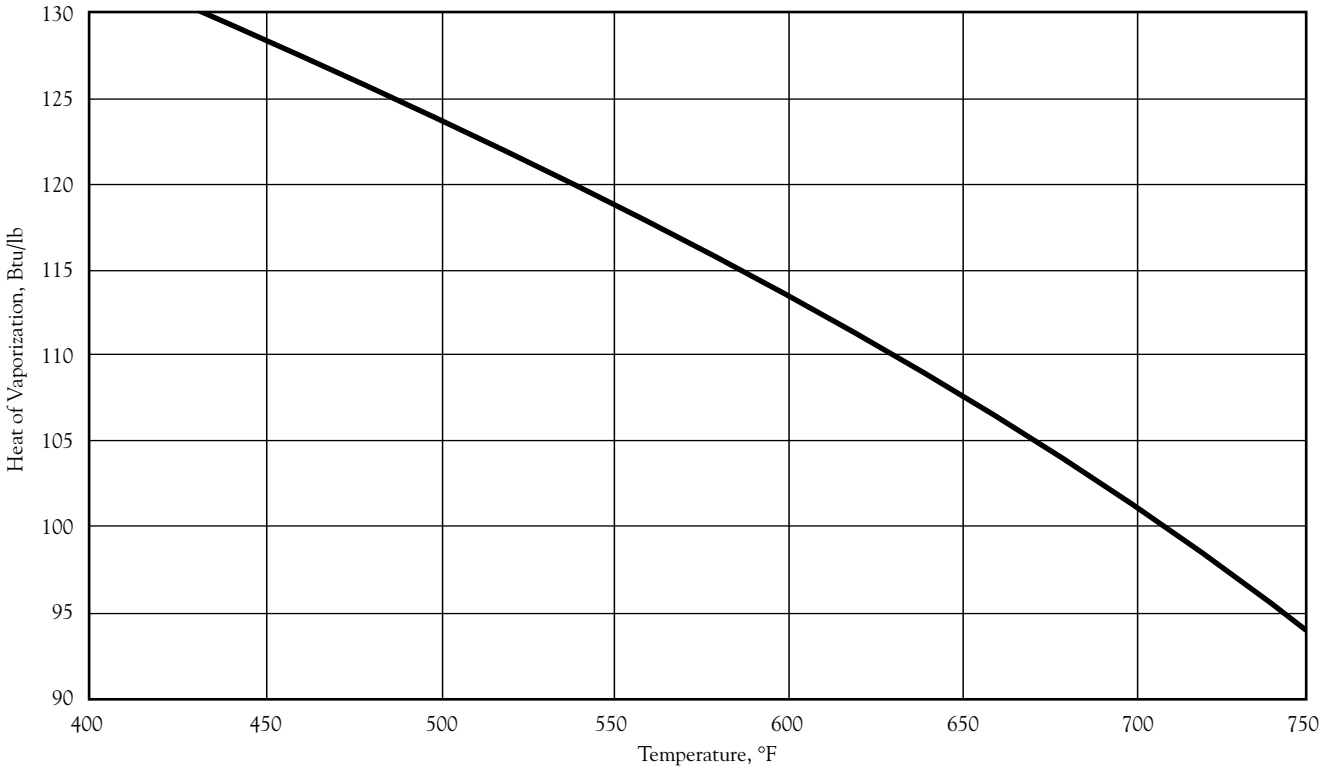


Figure 4—Calculated Heat of Vaporization of DOWTHERM G Fluid (SI Units)

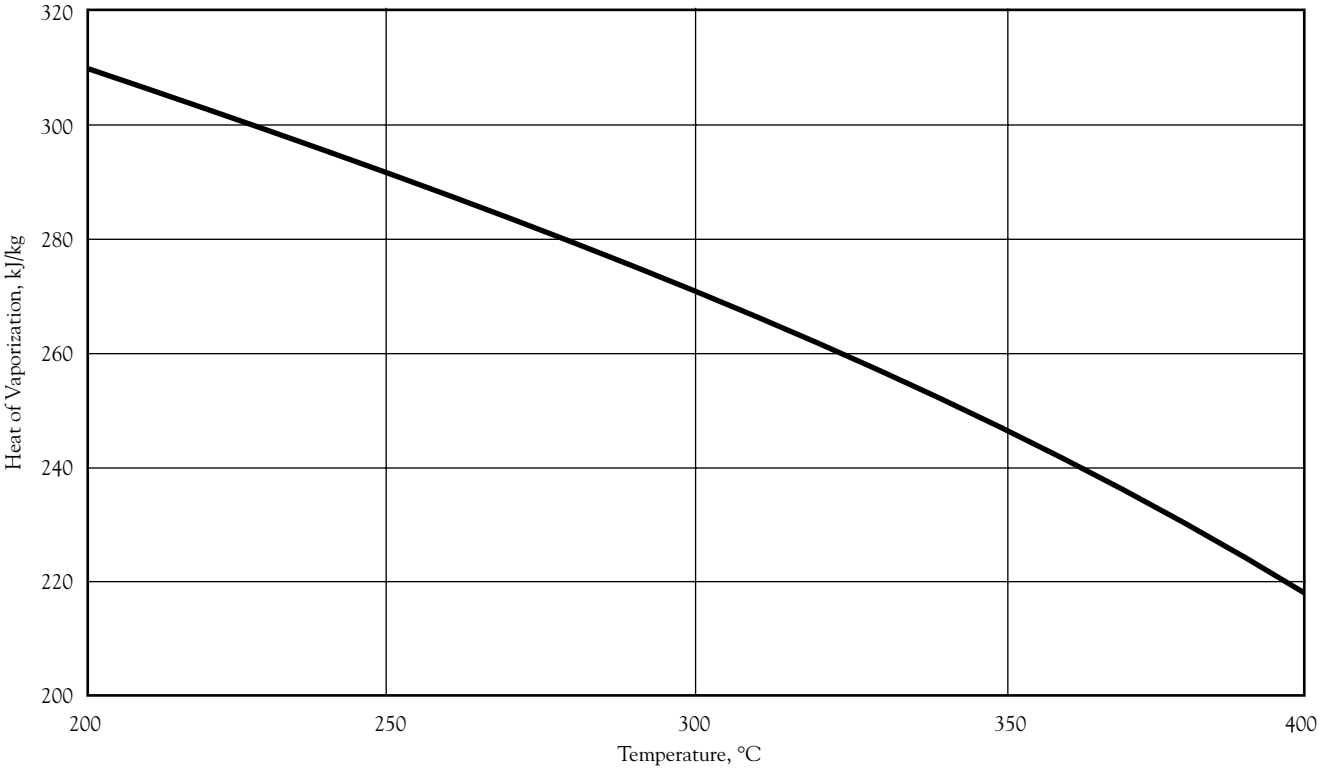


Figure 5—Vapor Pressure of DOWTHERM G Fluid (English Units)

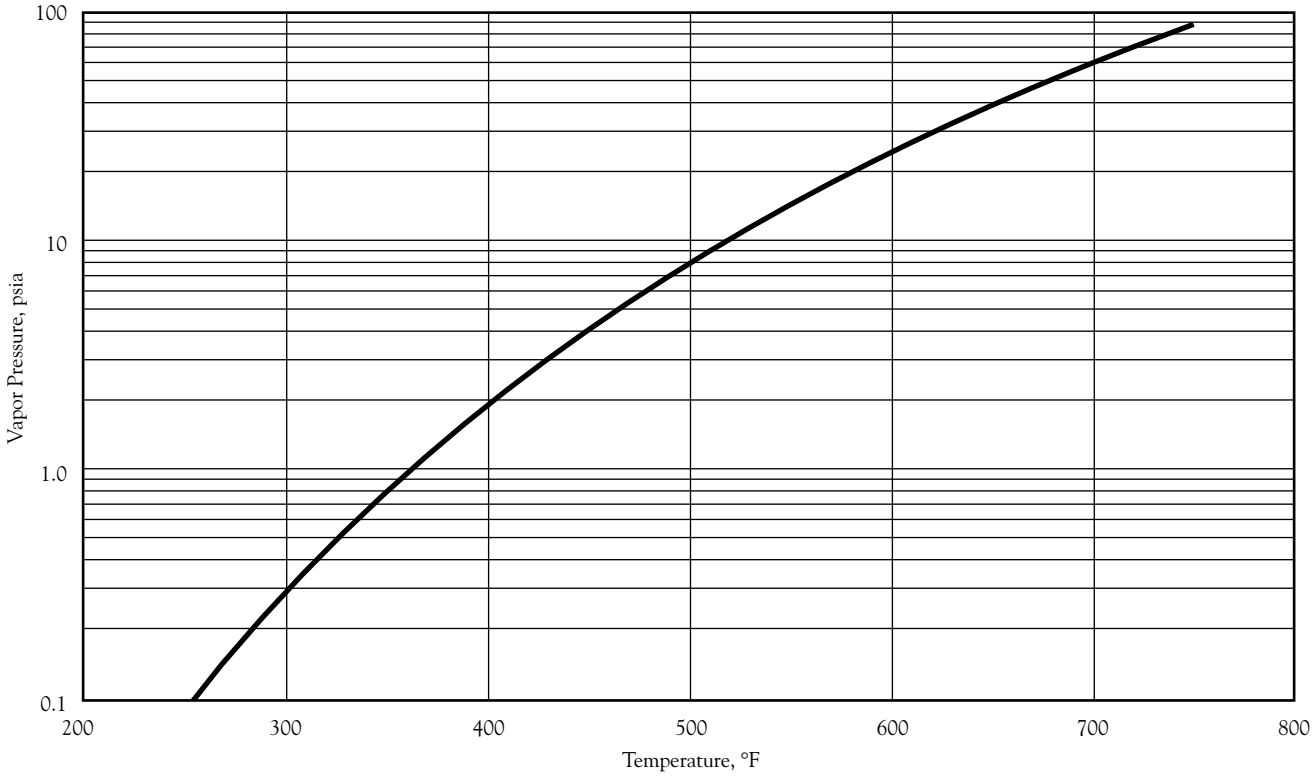


Figure 6—Vapor Pressure of DOWTHERM G Fluid (SI Units)

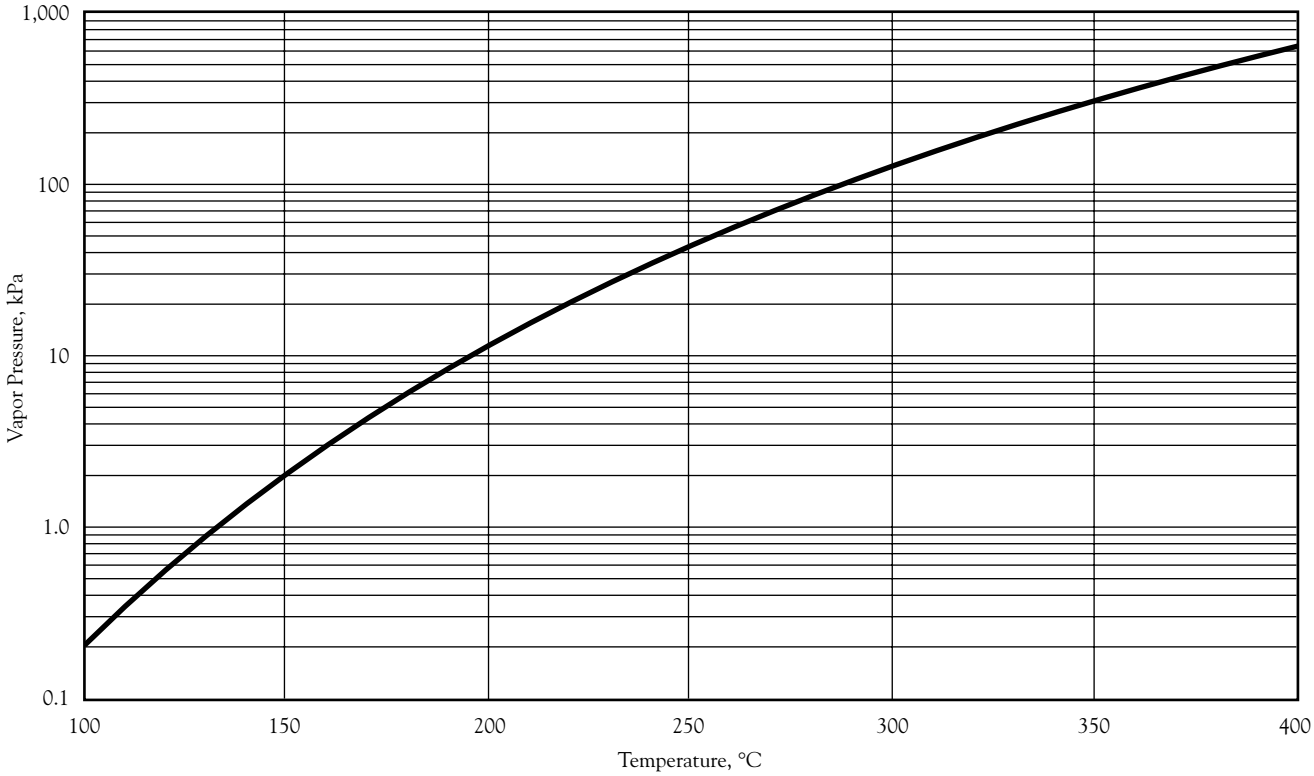


Figure 7—Specific Heat of DOWTHERM G Fluid (English Units)

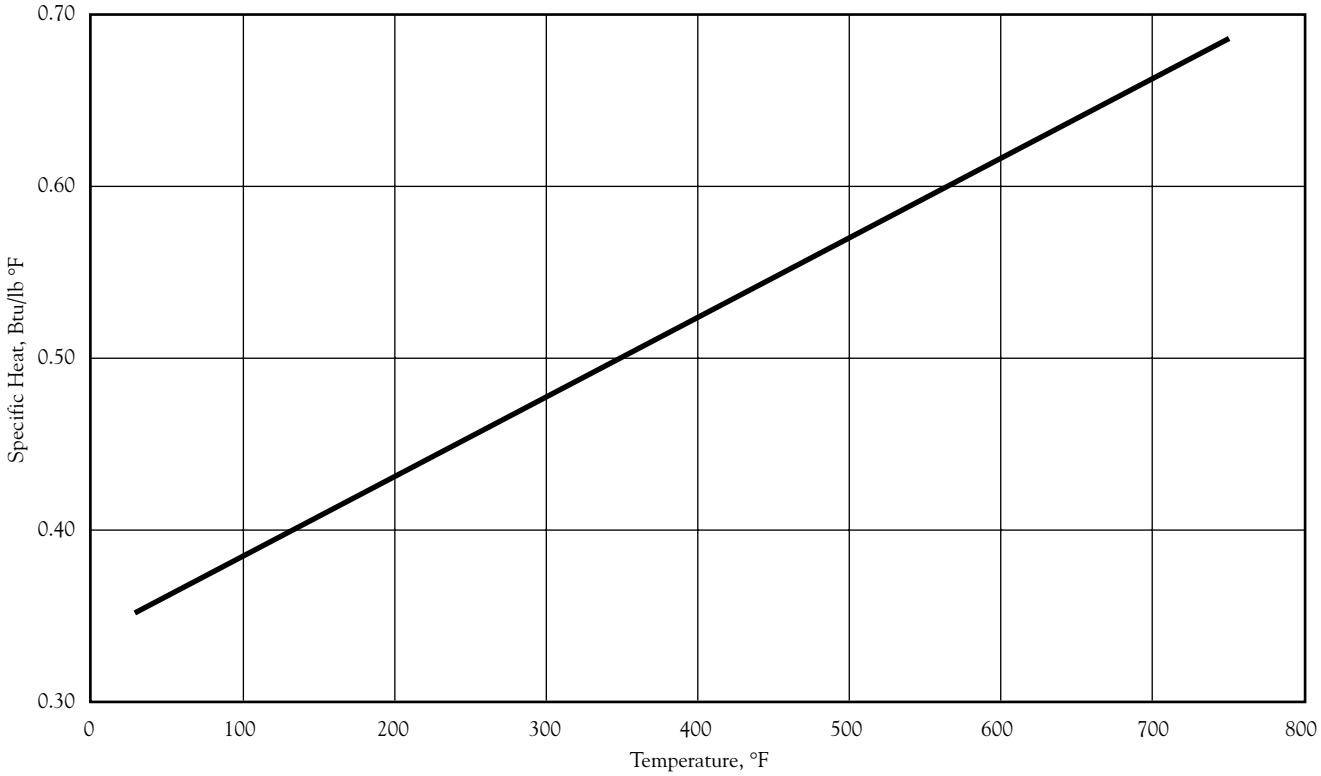


Figure 8—Specific Heat of DOWTHERM G Fluid (SI Units)

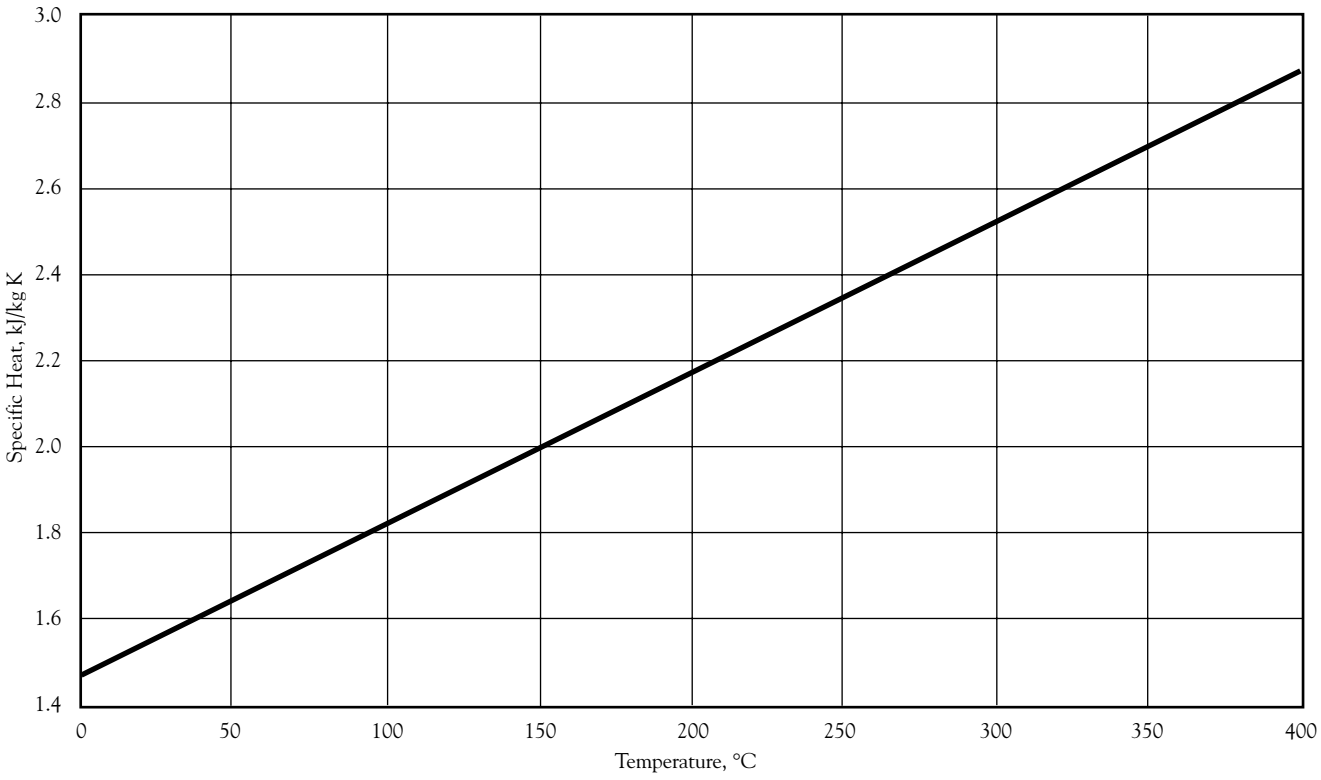


Figure 9—Density of DOWTHERM G Fluid (English Units)

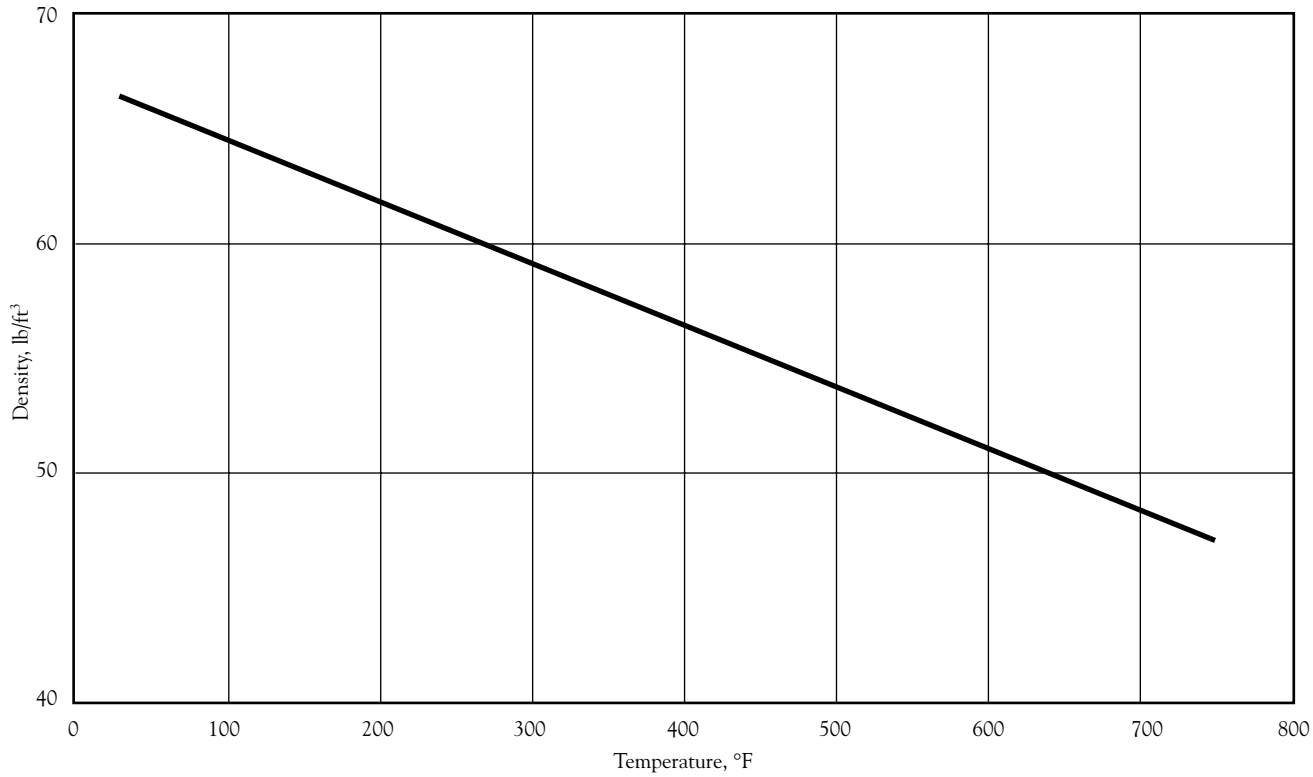


Figure 10—Density of DOWTHERM G Fluid (SI Units)

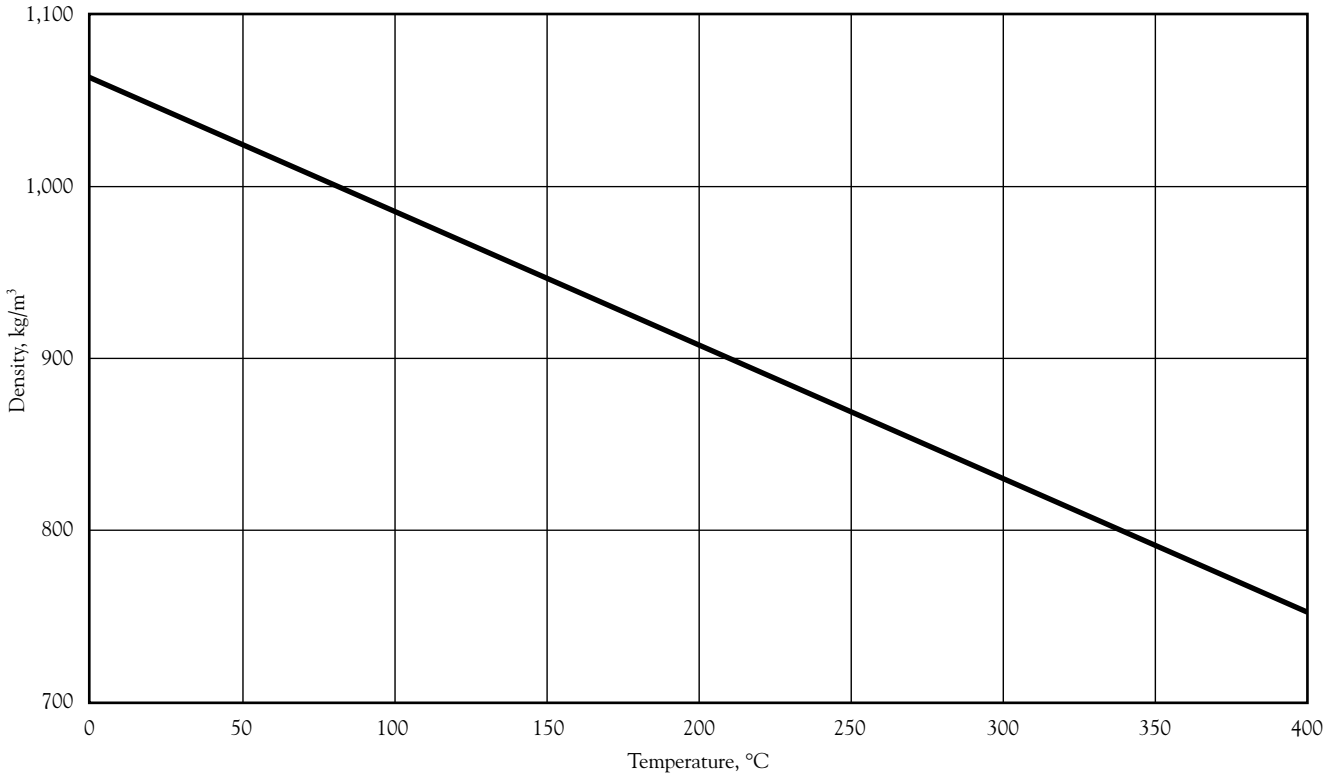


Figure 11—Viscosity of DOWTHERM G Fluid (English Units)

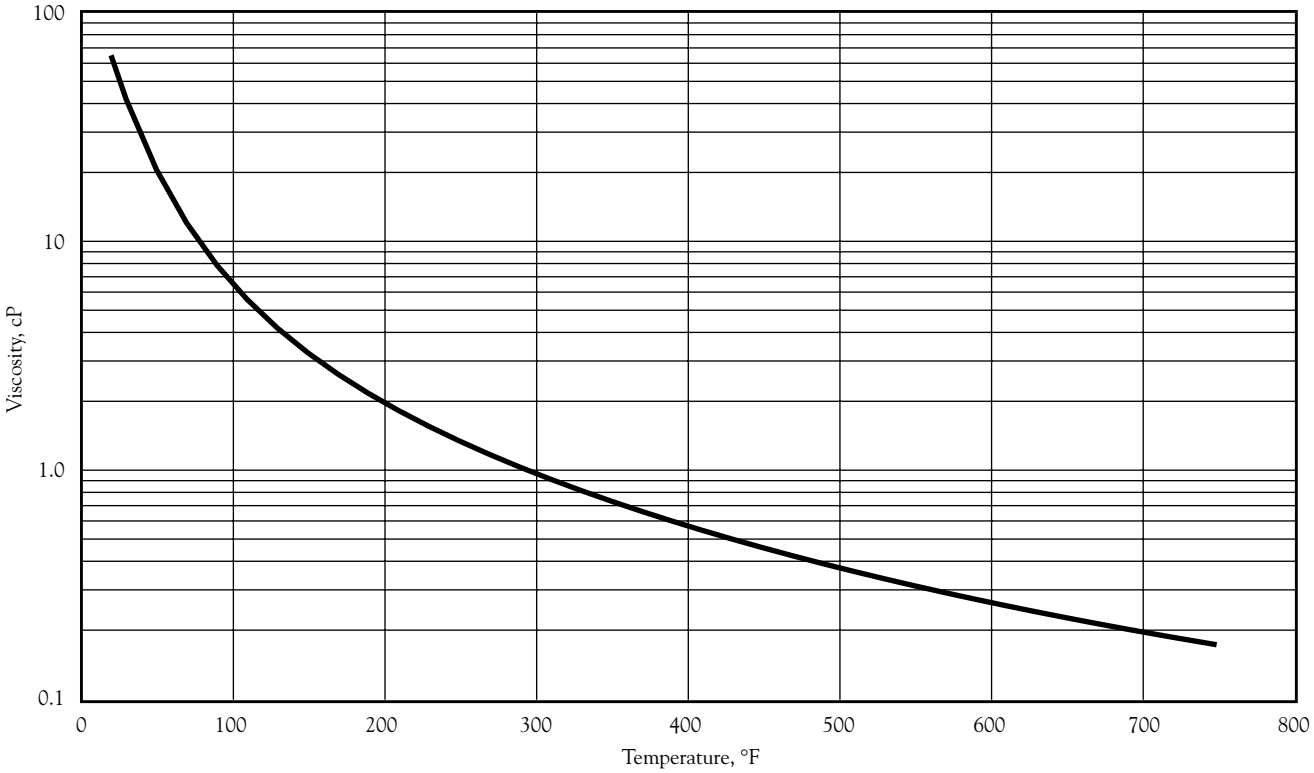


Figure 12—Viscosity of DOWTHERM G Fluid (SI Units)

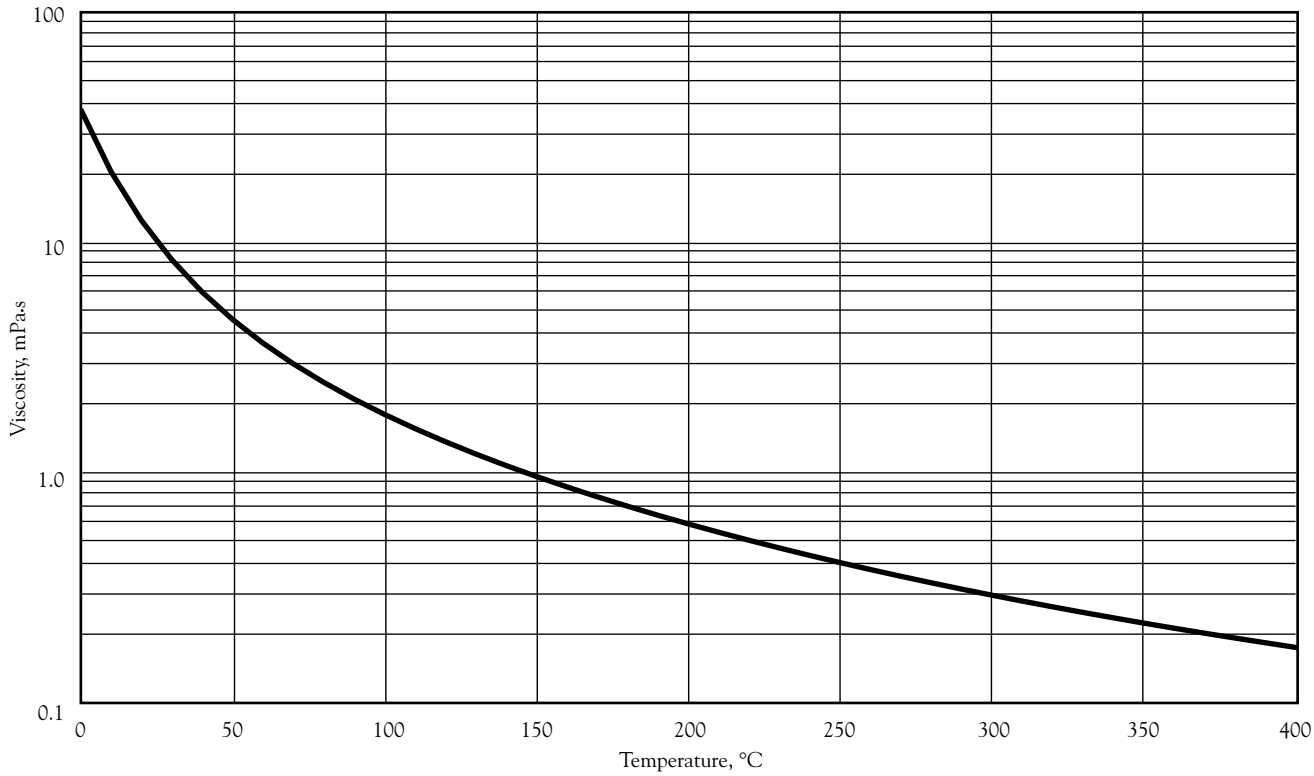
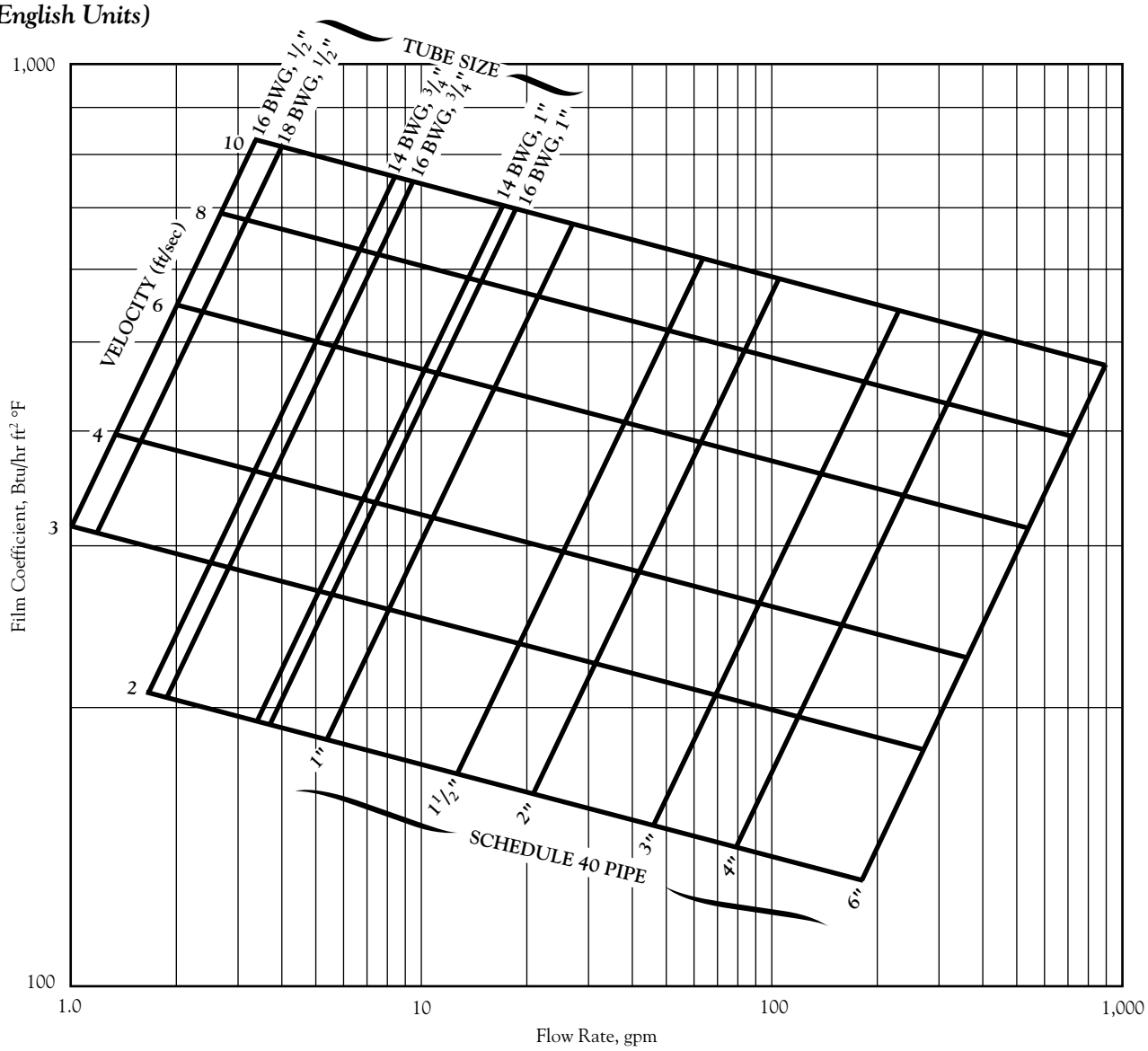
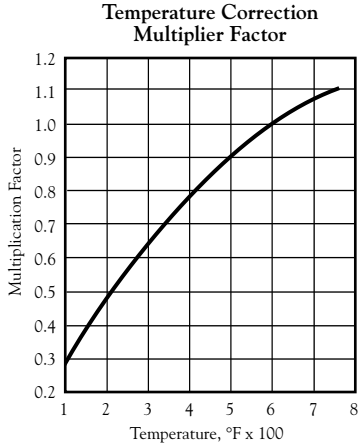


Figure 13—Liquid Film Coefficient for DOWTHERM G Fluid Inside Pipes and Tubes (Turbulent Flow Only) (English Units)





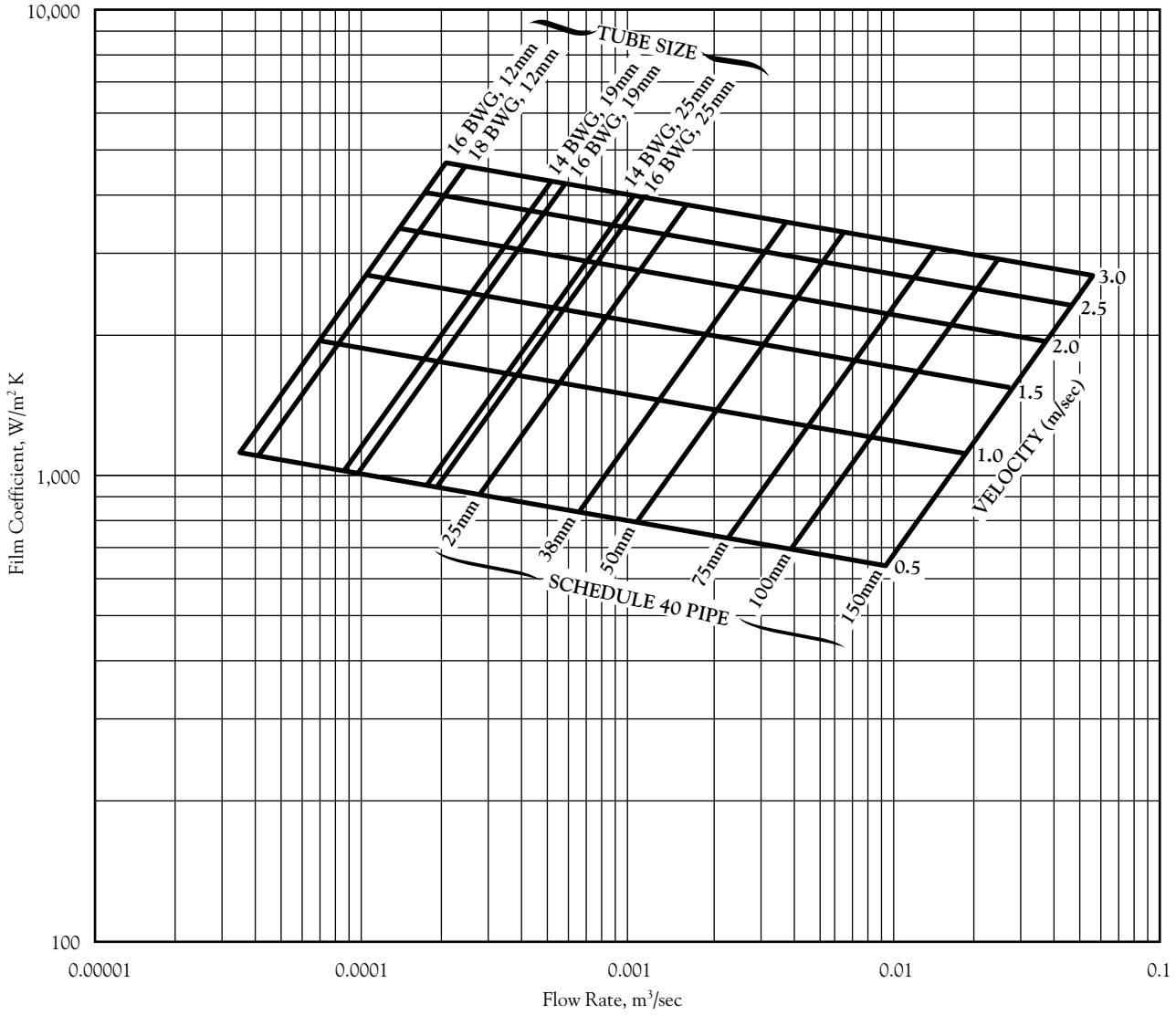
Sieder and Tate equation
Process Heat Transfer,
D.Q. Kern (1950) p. 103

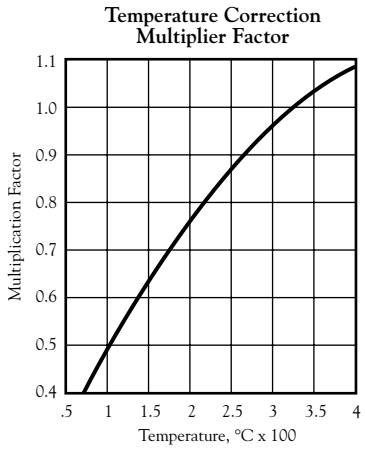
$$Nu = 0.027\, Re^{0.8} PR^{1/3} \left(\frac{\mu}{\mu_w}\right)^{0.14}$$

Chart based on $\left(\frac{\mu}{\mu_w}\right)^{0.14} = 1$

Note: The values in this graph are based on the viscosity of fluid as supplied.

Figure 14—Liquid Film Coefficient for DOWTHERM G Fluid Inside Pipes and Tubes (Turbulent Flow Only) (SI Units)



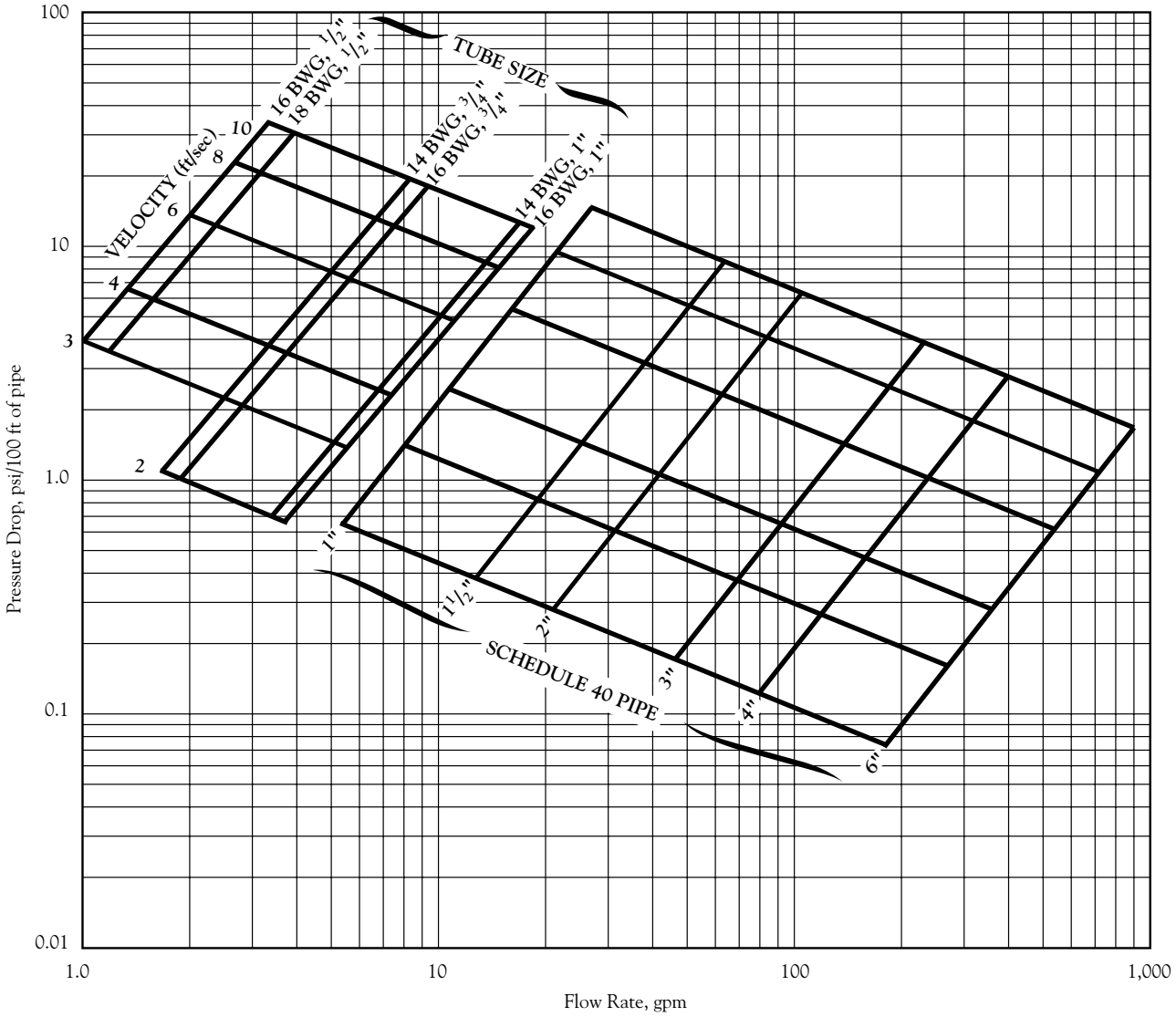


Sieder and Tate equation
Process Heat Transfer,
D.Q. Kern (1950) p. 103

$$Nu = 0.027\, Re^{0.8} Pr^{1/3} \left(\frac{\mu}{\mu_w}\right)^{0.14} \qquad \text{Chart based on } \left(\frac{\mu}{\mu_w}\right)^{0.14} = 1$$

Note: The values in this graph are based on the viscosity of fluid as supplied.

Figure 15—Pressure Drop vs. Flow Rate of DOWTHERM G Fluid in Schedule 40 Nominal Pipe and BWG Tube (English Units)



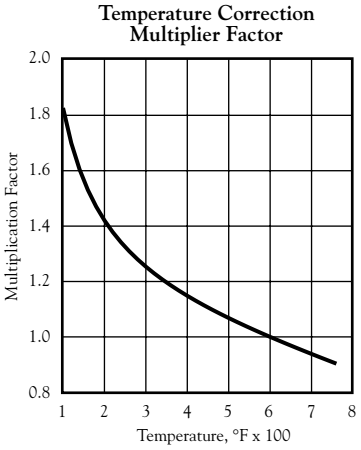
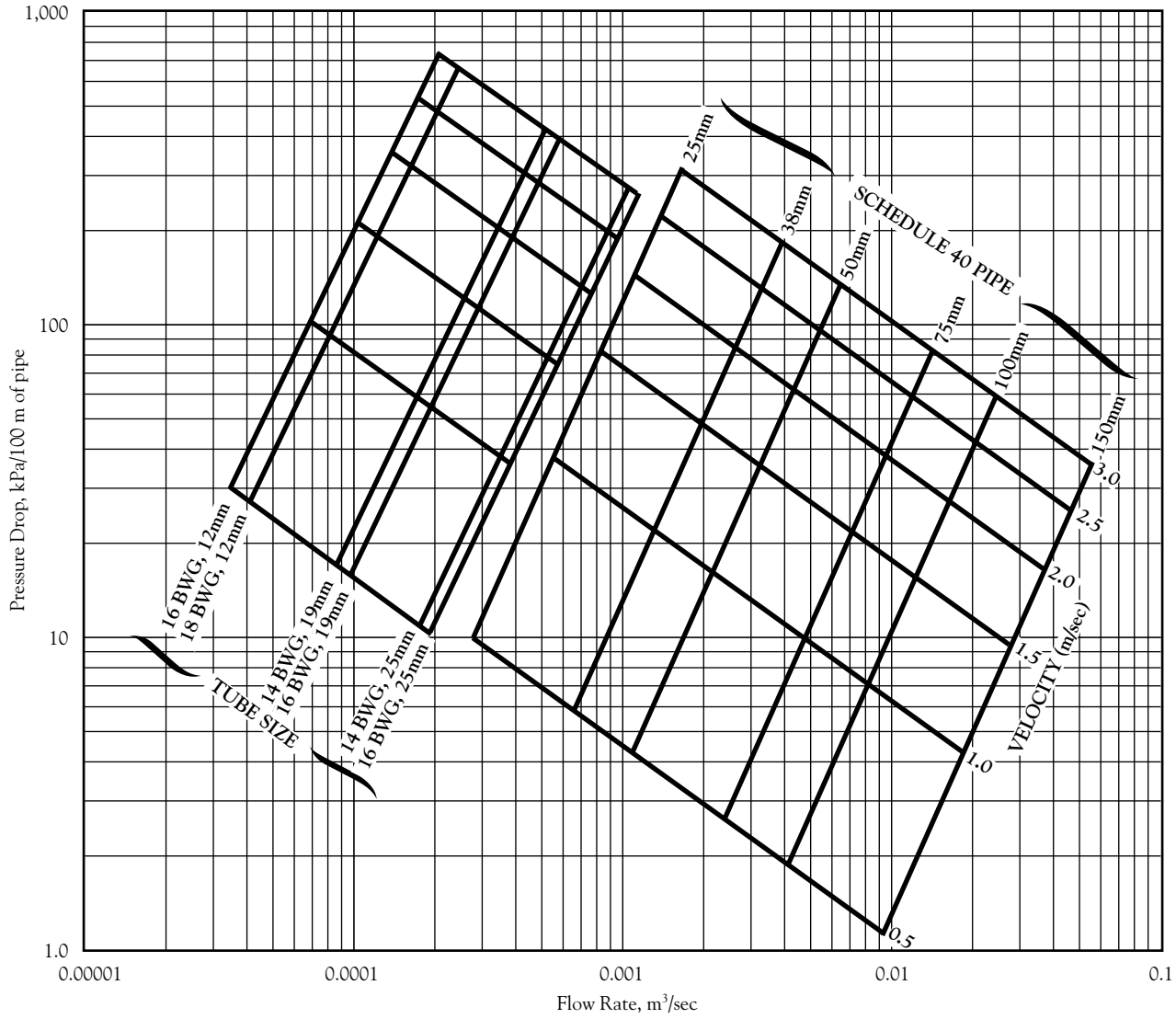


Figure 16—Pressure Drop vs. Flow Rate of DOWTHERM G Fluid in Schedule 40 Nominal Pipe and BWG Tube (SI Units)



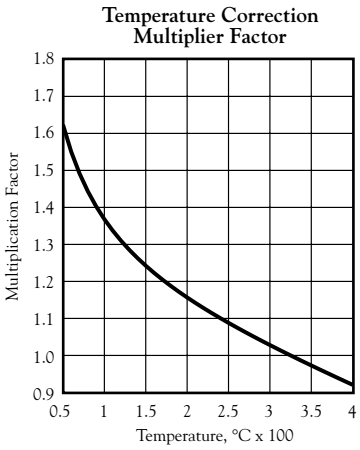


Figure 17—Thermal Expansion of DOWTHERM G Fluid (English Units)

Basis: 1 gallon at 77°F

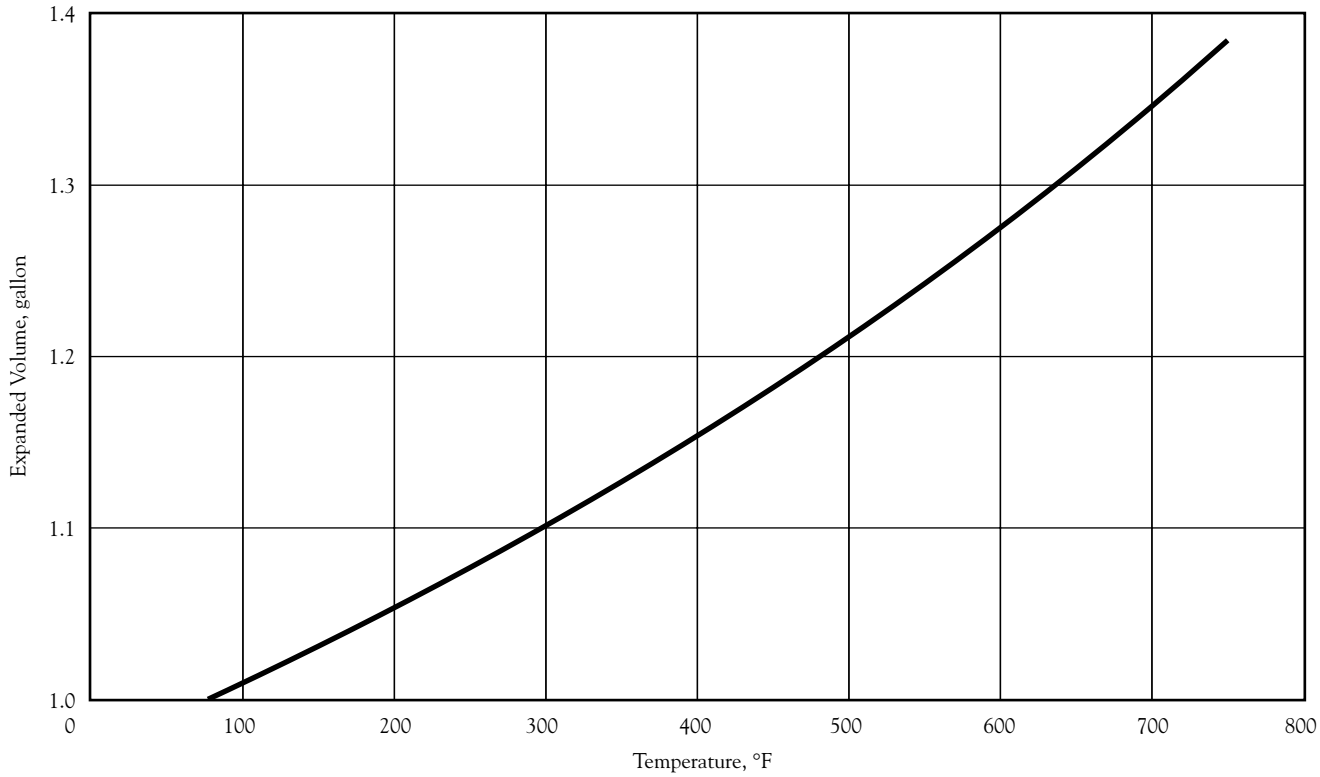
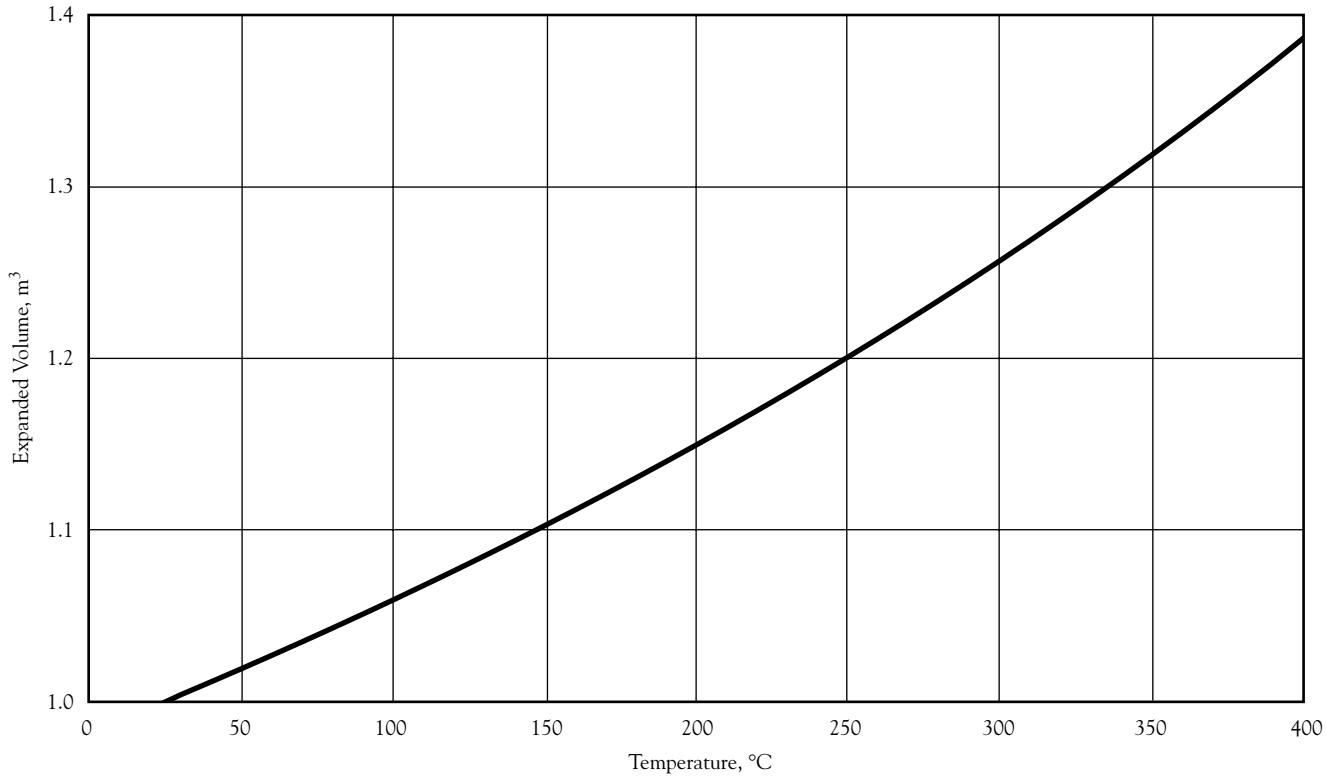


Figure 18—Thermal Expansion of DOWTHERM G Fluid (SI Units)

Basis: 1 m³ at 25°C



Instrument Legend

BA – Burner Alarm
BC – Burner Control
BE – Burner Element (Fire-Eye)
FI – Flow Indicator (Orifice)
FRC – Flow Recording Controller
FSL – Flow Switch Low
$LA^{H}/_{L}$ – Level Alarm–High/Low
LI – Level Indicator
LC – Level Controller
LSL – Level Switch Low
PCV – Pressure Control Valve
PI – Pressure Indicator
PIC – Pressure Indicating Controller
PRV – Pressure Relief Valve
PSH – Pressure Switch High
PSL – Pressure Switch Low
TIC – Temperature Indicating Controller
TRC – Temperature Recorder Controller
TSH – Temperature Switch High

Principal Circuits with DOWTHERM Fluid
Electrical Lines
Instrument Air Lines

Thermal Tracing System required if ambient temperature = <40°F (4°C).

(A) – External heating required if fluid pumpability is limiting in cold weather.

(B) – Thermal tracing system on vent and safety valve lines if ambient temperature = <80°F (27°C).

(C) – Heat exchanger #2 is cooled with DOWTHERM G Fluid to avoid any possibility of contaminating the process fluid with water in the event of a tube leak.

(D) – Process fluid freezes at <100°F (<81°C).

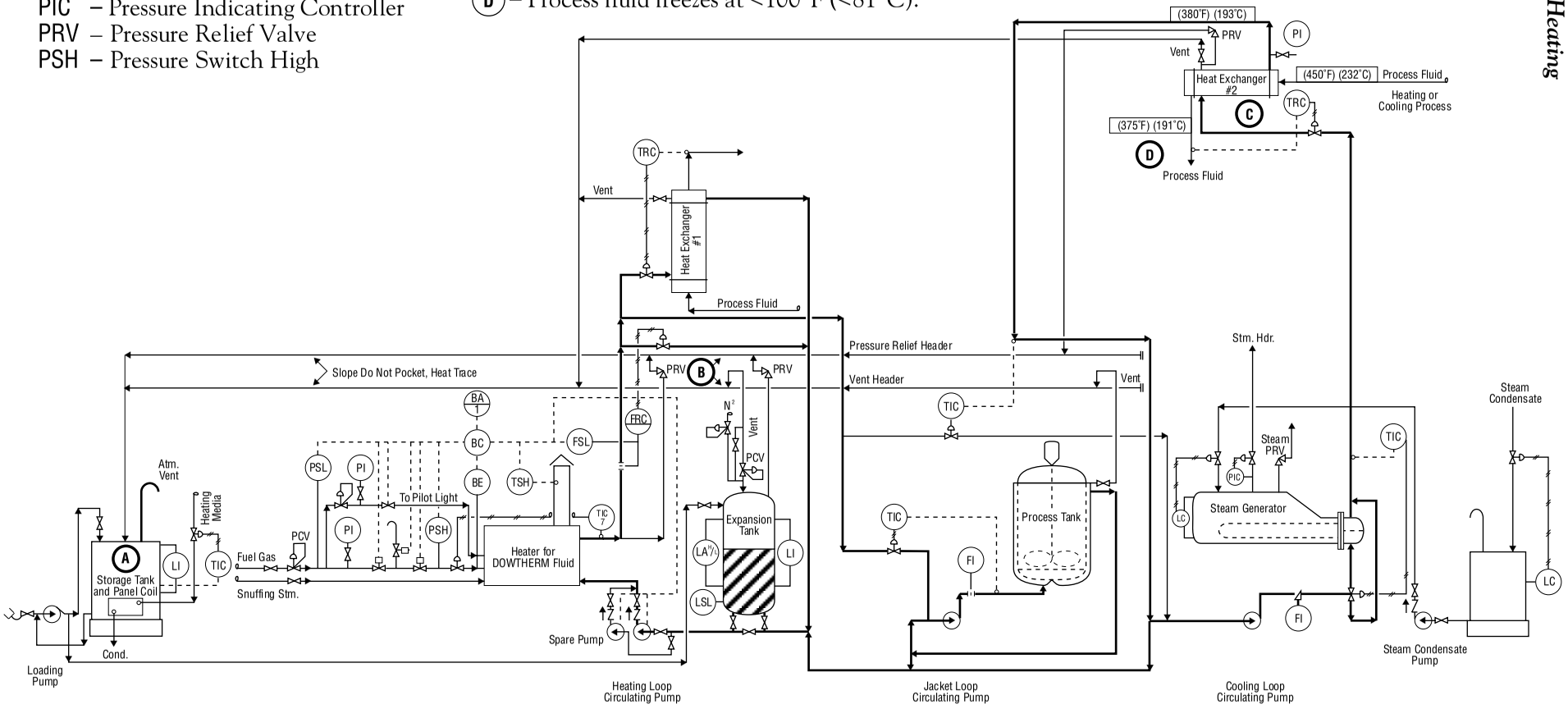


Figure 19— Typical Liquid Phase Heating Scheme Using DOWTHERM Fluids

DOWTHERM* G Heat Transfer Fluid

Product Technical Data

For further information, call...

In The United States And Canada: 1-800-447-4369 • FAX: 1-517-832-1465

In Europe: +31 20691 6268 • FAX: +31 20691 6418

In The Pacific: +886 2 715 3388 • FAX: +886 2 717 4115

In Other Global Areas: 1-517-832-1556 • FAX: 1-517-832-1465

http://www.dow.com/heattrans

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