TEC-THERM

Product Type Inhibited Ethylene Glycol-based heat transfer fluid

Applications

- Closed-loop, water-based HVAC
- Process heating and cooling
- Food industry applications within temperature range

Recommended Use Temperature Range -50°C (-60°F) to 120°C (250°F)

Description

TEC-THERM heat transfer fluid is a formulation of 95.5 weight percent ethylene glycol and a specially designed package of industrial corrosion inhibitors. The fluid is dyed fluorescent pink for leak detection purposes. Solutions in water provide freeze protection to below -50°C (-60°F) and burst protection to below -73°C (-100°F).

Typical Properties†

Composition (% by weight)	
Ethylene Glycol	95.5
Performance Additives	4.5
Color	Fluorescent pink
Specific Gravity 25/25°C (77/77°F)	1.1250-1.1350
pH of Solution (50% glycol)	9.0-10.5
Reserve Alkalinity (min.)	12.0 ml

†Typical properties, not to be construed as specifications. Complete sales specifications are available on request.

Typical Concentrations of TEC-THERM Fluid Required to Provide Freeze and Burst Protection at Various Temperatures

Temperature °C	Temperature (°F)	Percent TEC-THERM For Freeze Protection Volume %	Fluid Concentration Required For Burst Protection Volume %
-7	(20)	16.8	11.5
-12	(10)	26.2	17.8
-18	(0)	34.6	23.1
-23	(-10)	40.9	27.3
-29	(-20)	46.1	31.4
-34	(-30)	50.3	31.4
-40	(-40)	54.5	31.4
-46	(-50)	58.7	31.4
-51	(-60)	62.9	31.4

Note: These figures are examples only and may not be appropriate to your situation. Generally, for an extended margin of protection, you should select a temperature in this table that is at least 3°C (5°F) lower than the expected lowest ambient temperature. Inhibitor levels should be adjusted for solutions of less than 30% glycol. Contact TEC-THERM for information on specific cases or for further assistance.

Attention: These are typical numbers only and are not to be regarded as specifications. As use conditions are not within its control, TEC-THERM does not guarantee results from use of the information or products herein; and gives no warranty, express or implied.

TEC-THERM • 1320 1st Street • Rock Island, IL • 61201 • 309.788.5631

The product described above is designed for a specific use and may not be valid for other uses not specified in our specification sheet or in applications not requiring this specific product. Tec-Therm believes that the information presented in this specification is accurate at the time it was written and is based upon internally generated information and information presented by its vendors. No representation, warranty, or guarantee is made as to its accuracy or completeness. We do not accept any liability for any loss or damage that may occur from the use of this information.

TEC-THERM

Typical Freezing and Boiling Points of TEC-THERM Fluid

Wt. % Ethylene Glycol	Vol. % Ethylene Glycol	Wt. % TEC-THERM	Vol. % TEC-THERM	Freezing Point °C	Freezing Point (°F)	Boiling Point °C @ 101 kPa (°F @ 760 mmHG)	Boiling Point (°F)	Degree Brix††	Refractive Index 22°C (72°F)
0.0	0.0	0.0	0.0	0	(32.0)	100.0	(212)	0.0	1.3328
5.0	4.4	5.2	4.6	-1.4	(29.4)	100.6	(213)	3.8	1.3378
10.0	8.9	10.5	9.3	-3.2	(26.2)	101.1	(214)	6.8	1.3428
15.0	13.6	15.7	14.2	-5.4	(22.2)	101.7	(215)	9.9	1.3478
20.0	18.1	20.9	19.0	-7.8	(17.9)	102.2	(216)	13.0	1.3530
25.0	22.9	26.2	24.0	-10.7	(12.7)	103.3	(218)	16.1	1.3582
30.0	27.7	31.4	29.0	-14.1	(6.7)	104.4	(220)	19.2	1.3635
35.0	32.6	36.6	34.1	-17.9	(-0.2)	105.0	(221)	22.3	1.3688
40.0	37.5	41.9	39.3	-22.3	(-8.1)	105.6	(222)	25.3	1.3741
45.0	42.5	47.1	44.5	-27.5	(-17.5)	106.7	(224)	28.3	1.3796
50.0	47.6	52.4	49.8	-33.8	(-28.9)	107.2	(225)	31.2	1.3849
55.0	52.7	57.6	55.2	-41.1	(-42.0)	108.3	(227)	33.9	1.3900
60.0	57.8	62.8	60.5	-48.3	(-54.9)	110.0	(230)	36.6	1.3952
65.0	62.8	68.0	65.8	a	a	112.8	(235)	39.1	1.4003
70.0	68.3	73.3	71.5	a	a	116.7	(242)	41.7	1.4055
75.0	73.6	78.5	77.1	a	a	120.0	(248)	44.2	1.4107
80.0	78.9	83.8	82.6	-46.8	(-52.2)	123.9	(255)	46.6	1.4159
85.0	84.3	89.0	88.3	-36.9	(-34.5)	133.9	(273)	49.0	1.4208
90.0	89.7	94.2	93.9	-29.8	(-21.6)	140.6	(285)	51.2	1.4255
95.0	95.0	99.5	99.5	-19.4	(-3.0)	158.3	(317)	53.2	1.4300

†Typical properties, not to be construed as specifications.

††Degree Brix is a measure of the sugar concentration in a fluid and is important in fermentation and syrups applications. Although there is no sugar present in TEC-THERM heat transfer fluids, the glycol affects the refractive index of the fluid in a similar fashion.

[a]Freezing points are below -50°C (-60°F).

NOTE: Generally for an extended margin of protection, you should select a temperature in this table that is at least 3°C (5°F) lower than the expected lowest ambient temperature. Inhibitor levels should be adjusted for solutions of less than 30% glycol. Contact TEC-THERM for information on specific cases or for further assistance.

Saturation Properties of TEC-THERM Fluid at 30% Ethylene Glycol Concentration by Volume

Temperature °C	Temperature (°F)	Specific Heat kJ/(kg)(K)	Specific Heat (Btu/lb. °F)	Density kg/m³	Density (lb./ft.³)	Therm. Cond. W/mK	Therm. Cond. [Btu/hr. ft.² (°F/ft.)]	Viscosity mPa•s	Viscosity (cps)
-10	(14)	3.562	(0.851)	1055.47	(65.89)	0.4154	(0.2400)	6.1788	(6.18)
10	(50)	3.619	(0.865)	1049.91	(65.54)	0.4420	(0.2554)	2.9482	(2.95)
40	(104)	3.704	(0.885)	1037.92	(64.80)	0.4731	(0.2733)	1.3398	(1.34)
65	(149)	3.775	(0.902)	1024.59	(63.96)	0.4909	(0.2836)	0.8246	(0.82)
90	(194)	3.846	(0.919)	1008.20	(62.94)	0.5015	(0.2897)	0.5599	(0.56)
120	(248)	3.931	(0.939)	984.53	(61.46)	0.5044	(0.2915)	0.5044	(0.38)

Saturation Properties of TEC-THERM Fluid at 40% Ethylene Glycol Concentration by Volume

Temperature °C	Temperature (°F)	Specific Heat kJ/(kg)(K)	Specific Heat (Btu/lb. °F)	Density kg/m³	Density (lb./ft.³)	Therm. Cond. W/mK	Therm. Cond. [Btu/hr. ft.² (°F/ft.)]	Viscosity mPa•s	Viscosity (cps)
-20	(-4)	3.336	(0.797)	1073.23	(67.00)	0.3707	(0.2142)	15.7533	(15.75)
10	(50)	3.436	(0.821)	1064.73	(66.47)	0.4053	(0.2342)	4.0451	(4.05)
40	(104)	3.537	(0.845)	1051.85	(65.66)	0.4312	(0.2491)	1.7731	(1.77)
65	(149)	3.621	(0.865)	1037.76	(64.79)	0.4462	(0.2578)	1.0646	(1.06)
90	(194)	3.705	(0.885)	1020.63	(63.72)	0.4552	(0.2630)	0.7013	(0.70)
120	(248)	3.805	(0.909)	996.06	(62.18)	0.4582	(0.2647)	0.4614	(0.46)

TEC-THERM

Saturation Properties of TEC-THERM Fluid at 50% Ethylene Glycol Concentration by Volume

Temperature °C	(°F)	Specific Heat kJ/(kg)(K) (Btu/lb. °F)		Density kg/m³ (lb./ft.³)		Therm. Cond. W/mK [Btu/hr. ft.² (°F/ft.)]		Viscosity mPa•s (cps)	
-30	(-22)	3.090	(0.739)	1090.31	(68.07)	0.3333	(0.1926)	43.9970	(44.0)
-20	(-4)	3.129	(0.748)	1088.15	(67.93)	0.3442	(0.1989)	22.0816	(22.08)
10	(50)	3.245	(0.776)	1078.72	(67.34)	0.3724	(0.2152)	5.5071	(5.51)
40	(104)	3.361	(0.803)	1064.91	(66.48)	0.3937	(0.2275)	2.2567	(2.26)
65	(149)	3.457	(0.826)	1050.05	(65.55)	0.4062	(0.2347)	1.2936	(1.29)
90	(194)	3.554	(0.849)	1032.15	(64.44)	0.4139	(0.2391)	0.8227	(0.82)
120	(248)	3.670	(0.877)	1006.66	(62.84)	0.4168	(0.2408)	0.5252	(0.53)