

Low Temperature, High-Performance Heat Transfer Fluid

Process Applications

- Pharmaceutical
- Food & beverage
- Reactor cooling
- Thermal Storage
- Process cooling & heating
- Ice & snow melting systems
- Refrigeration systems
- Climactic Chambers
- Wind tunnels
- Ground freezing
- Replacement fluid in CaCl₂, TCE, & DCM systems

■ HC Technology

Dynalene HC is a potassium formate/water-based heat transfer fluid engineered to deliver a much higher performance than glycol and calcium chloride throughout its temperature range. This user-friendly fluid poses little risk to the environment, equipment or personnel. Five concentrations of Dynalene HC and many specialty mixtures are available to serve a wide range of applications.

Dynalene HC is non-toxic, non-flammable, exhibits superior heat transfer characteristics to other low-temperature heat transfer fluid chemistries, and can also be utilized as an alternative to glycols, CaCl₂, trichloroethylene, and methylene chloride. Custom formulations are available to satisfy applications at any process temperature down to -55°C (-67°F).

■ Corrosion Protection

Dynalene HC utilizes a special corrosion inhibitor package. This unique inhibitor offers superior corrosion protection for most metals including, carbon steel, brass, copper, stainless steel, and many other alloys by creating a passive layer on the surface that contacts the Dynalene HC and prevents corrosion from forming. Please refer to the Dynalene HC engineering guide for information on system preparation and maintenance.

■ Benefits of Choosing Dynalene HC

- Pre-mixed solutions
- Non-toxic
- Non-flammable
- Superior heat transfer
- Custom blends
- Ability to be re-inhibited
- Proven performance
- Available worldwide
- Cost-effective
- Total fluid care

Recommended Temperature Ranges:

Closed systems:	HC-50: -50°C (-58°F) to 218°C (425°F)
	HC-40: -40°C (-40°F) to 218°C (425°F)
	HC-30: -30°C (-22°F) to 218°C (425°F)
	HC-20: -20°C (-4°F) to 218°C (425°F)
	HC-10: -10°C (14°F) to 218°C (425°F)
Open systems:	HC-50: -51°C (-60°F) to 110°C (230°F)

Freezing Point:

HC-10	< -20°C (< -4°F)
HC-20	< -30°C (< -22°F)
HC-30	< -40°C (< -40°F)
HC-40	< -50°C (< -58°F)
HC-50	< -55°C (< -67°F)

Boiling Point:

HC-10	108°C (226°F)
HC-20	110°C (230°F)
HC-30	112°C (234°F)
HC-40	115°C (239°F)
HC-50	118°C (244°F)

■ Properties of Dynalene HC

A comprehensive list of all thermo-physical properties of Dynalene HC can be found on pages 2, 3, and 4. For health and safety information or to request a Material Safety Data Sheet, contact our Dynalene sales representatives.

Composition:	Ionic solids, water
Appearance:	Clear to light blue
Odor:	None
Flash Point:	None
Fire Point:	None

■ Dynalene's Fluid Care Program

Coupling our Dynalene fluids with a fluid care program can extend the life of your systems significantly. It offers yearly testing of the heat transfer fluid in your system and tracks the changes in the fluid year to year so adjustments can be made to keep your systems working at its best.

HC-50

Temperature °F	Viscosity cP	Thermal Cond. BTU/hr-ft-°F	Specific Heat BTU/lb-°F	Density lb/ft ³
-58	38.40	0.256	0.612	85.9
-50	28.30	0.258	0.615	85.7
-40	20.40	0.262	0.617	85.6
-20	11.90	0.268	0.622	85.2
0	7.70	0.275	0.628	84.8
20	5.40	0.281	0.633	84.4
40	4.20	0.288	0.638	84.0
60	3.40	0.294	0.643	83.6
80	2.90	0.301	0.649	83.3
100	2.40	0.307	0.654	82.9
120	2.10	0.314	0.659	82.5
140	1.80	0.320	0.664	82.1
160	1.60	0.327	0.669	81.7
180	1.40	0.333	0.675	81.3
200	1.30	0.340	0.680	80.9
220	1.20	0.346	0.685	80.6
240	1.10	0.353	0.690	80.2
260	0.97	0.356	0.696	79.8
280	0.89	0.366	0.701	79.4
300	0.82	0.373	0.706	79.0
320	0.76	0.379	0.711	78.6
340	0.70	0.386	0.717	78.3
360	0.65	0.392	0.722	77.9
380	0.61	0.399	0.727	77.5
400	0.57	0.405	0.732	77.1
420	0.53	0.412	0.737	76.7
425	0.53	0.413	0.739	76.6

Temperature °C	Viscosity mPa-s	Thermal Cond. W/m-K	Specific Heat kJ/kg-K	Density kg/m ³
-50	38.40	0.435	2.563	1378
-40	20.40	0.445	2.583	1373
-30	12.50	0.455	2.602	1367
-20	8.40	0.465	2.622	1362
-10	5.99	0.475	2.642	1356
0	4.70	0.485	2.661	1351
10	3.80	0.495	2.681	1345
20	3.20	0.505	2.701	1340
30	2.70	0.515	2.720	1334
40	2.40	0.525	2.740	1328
50	2.10	0.535	2.760	1323
60	1.80	0.545	2.780	1317
70	1.60	0.555	2.799	1312
80	1.50	0.565	2.819	1306
90	1.30	0.575	2.839	1301
100	1.20	0.585	2.858	1295
110	1.10	0.595	2.878	1290
120	1.00	0.605	2.898	1284
130	0.94	0.615	2.917	1279
140	0.87	0.625	2.937	1273
150	0.81	0.635	2.957	1267
160	0.76	0.645	2.977	1262
170	0.71	0.655	2.996	1256
180	0.66	0.665	3.016	1251
190	0.62	0.675	3.036	1245
200	0.58	0.685	3.055	1240
210	0.55	0.6945	3.075	1234

HC-40

Temperature °F	Viscosity cP	Thermal Cond. BTU/hr-ft-°F	Specific Heat BTU/lb-°F	Density lb/ft ³
-40	14.90	0.264	0.669	84.0
-20	8.80	0.271	0.675	83.6
0	6.10	0.277	0.681	83.2
20	4.50	0.284	0.687	82.8
40	3.50	0.290	0.693	82.5
60	2.90	0.297	0.699	82.1
80	2.40	0.303	0.705	81.7
90	2.20	0.307	0.708	81.5
100	2.00	0.310	0.711	81.3
120	1.70	0.316	0.717	80.9
140	1.50	0.323	0.723	80.5
160	1.30	0.330	0.729	80.1
180	1.20	0.336	0.735	79.8
200	1.10	0.343	0.741	79.4
220	0.95	0.349	0.747	79.0
240	0.86	0.356	0.753	78.6
260	0.79	0.362	0.759	78.2
280	0.72	0.369	0.765	77.8
300	0.66	0.375	0.771	77.4
320	0.61	0.382	0.777	77.0
340	0.56	0.388	0.784	76.7
360	0.52	0.395	0.79	76.3
380	0.49	0.401	0.796	75.9
400	0.45	0.408	0.802	75.5
420	0.42	0.414	0.808	75.1
425	0.42	0.416	0.809	75.0

Temperature °C	Viscosity mPa-s	Thermal Cond. W/m-K	Specific Heat kJ/kg-K	Density kg/m ³
-40	14.90	0.449	2.80	1348
-30	9.20	0.459	2.82	1343
-20	6.50	0.469	2.84	1337
-10	4.90	0.479	2.87	1332
0	3.90	0.489	2.89	1326
10	3.20	0.499	2.91	1321
20	2.70	0.509	2.93	1315
30	2.30	0.519	2.96	1309
40	1.96	0.529	2.98	1304
50	1.70	0.539	3.00	1298
60	1.50	0.549	3.03	1293
70	1.40	0.559	3.05	1287
80	1.20	0.569	3.07	1281
90	1.10	0.579	3.09	1276
100	0.99	0.589	3.12	1270
110	0.91	0.599	3.14	1265
120	0.83	0.609	3.16	1259
130	0.77	0.619	3.19	1253
140	0.71	0.629	3.21	1248
150	0.66	0.639	3.23	1242
160	0.61	0.649	3.25	1237
165	0.59	0.654	3.27	1234
170	0.57	0.659	3.28	1231
180	0.53	0.669	3.30	1225
190	0.50	0.679	3.32	1220
200	0.47	0.689	3.35	1214

HC-30

Temperature °F	Viscosity cP	Thermal Cond. BTU/hr-ft-°F	Specific Heat BTU/lb-°F	Density lb/ft ³
-22	6.99	0.276	0.708	81.0
-20	6.80	0.276	0.708	81.0
0	5.30	0.283	0.714	80.6
20	4.20	0.289	0.721	80.3
40	3.40	0.296	0.727	79.9
60	2.70	0.302	0.733	79.6
80	2.30	0.309	0.739	79.2
100	1.90	0.316	0.745	78.9
120	1.60	0.322	0.751	78.5
140	1.40	0.329	0.757	78.2
160	1.20	0.335	0.763	77.8
180	1.10	0.342	0.770	77.5
200	0.95	0.348	0.776	77.1
220	0.85	0.355	0.782	76.8
240	0.76	0.361	0.788	76.4
260	0.69	0.368	0.794	76.0
280	0.62	0.374	0.800	75.7
300	0.57	0.381	0.806	75.3
320	0.52	0.387	0.812	75.0
340	0.48	0.394	0.819	74.6
360	0.44	0.400	0.825	74.3
380	0.41	0.407	0.831	73.9
400	0.38	0.414	0.837	73.6
420	0.36	0.420	0.843	73.2
425	0.35	0.422	0.845	73.1

Temperature °C	Viscosity mPa·s	Thermal Cond. W/m-K	Specific Heat kJ/kg-K	Density kg/m ³
-30	7.00	0.469	2.961	1300
-20	5.50	0.479	2.984	1295
-10	4.50	0.489	3.007	1290
0	3.70	0.499	3.031	1285
10	3.00	0.509	3.054	1280
20	2.50	0.519	3.077	1275
30	2.20	0.529	3.100	1270
40	1.90	0.539	3.123	1265
50	1.60	0.549	3.146	1260
60	1.40	0.559	3.169	1255
70	1.30	0.569	3.192	1250
80	1.10	0.579	3.215	1244
90	0.99	0.589	3.238	1239
100	0.89	0.599	3.262	1234
110	0.80	0.609	3.285	1229
120	0.73	0.619	3.308	1224
130	0.67	0.629	3.331	1219
140	0.61	0.639	3.354	1214
150	0.57	0.649	3.377	1209
160	0.52	0.659	3.400	1204
170	0.48	0.669	3.423	1199
180	0.45	0.679	3.446	1193
190	0.42	0.689	3.469	1188
200	0.39	0.699	3.493	1183
210	0.37	0.709	3.516	1178

HC-20

Temperature °F	Viscosity cP	Thermal Cond. BTU/hr-ft-°F	Specific Heat BTU/lb-°F	Density lb/ft ³
-4	4.50	0.284	0.745	78.4
0	4.30	0.285	0.746	78.3
20	3.40	0.292	0.752	77.9
40	2.80	0.298	0.759	77.6
60	2.30	0.305	0.765	77.2
80	1.90	0.311	0.771	76.9
100	1.60	0.318	0.777	76.5
120	1.40	0.324	0.784	76.1
140	1.20	0.331	0.790	75.8
160	1.00	0.337	0.796	75.4
180	0.93	0.344	0.803	75.1
200	0.82	0.351	0.809	74.7
220	0.73	0.357	0.815	74.3
240	0.66	0.364	0.821	74.0
260	0.60	0.370	0.828	73.6
280	0.54	0.377	0.834	73.3
300	0.50	0.383	0.840	72.9
320	0.46	0.390	0.846	72.6
340	0.42	0.396	0.853	72.2
360	0.39	0.403	0.859	71.8
380	0.36	0.409	0.865	71.5
400	0.34	0.416	0.871	71.1
420	0.32	0.422	0.878	70.8
425	0.31	0.424	0.879	70.7

Temperature °C	Viscosity mPa·s	Thermal Cond. W/m-K	Specific Heat kJ/kg-K	Density kg/m ³
-20	4.50	0.483	3.117	1258
-10	3.60	0.493	3.141	1253
0	3.00	0.503	3.164	1248
10	2.50	0.513	3.188	1242
20	2.10	0.523	3.212	1237
30	1.80	0.533	3.235	1232
40	1.60	0.543	3.259	1227
50	1.40	0.553	3.282	1222
60	1.20	0.563	3.306	1216
70	1.10	0.573	3.330	1211
80	0.95	0.583	3.353	1206
90	0.85	0.593	3.377	1201
100	0.77	0.603	3.400	1196
110	0.70	0.613	3.424	1191
120	0.63	0.623	3.448	1185
130	0.58	0.633	3.471	1180
140	0.54	0.643	3.495	1175
150	0.49	0.653	3.518	1170
160	0.46	0.663	3.542	1165
170	0.43	0.673	3.566	1159
180	0.40	0.683	3.589	1154
190	0.37	0.693	3.613	1149
200	0.35	0.703	3.636	1144
210	0.33	0.713	3.660	1139

HC-10

Temperature °F	Viscosity cP	Thermal Cond. BTU/hr-ft·°F	Specific Heat BTU/lb·°F	Density lb/ft ³
14	3.00	0.291	0.776	75.0
20	2.80	0.293	0.778	74.9
40	2.30	0.299	0.784	74.6
60	1.90	0.306	0.791	74.3
80	1.60	0.312	0.797	74.0
90	1.50	0.316	0.801	73.8
100	1.40	0.319	0.804	73.6
120	1.20	0.326	0.811	73.3
140	1.00	0.332	0.817	73.0
160	0.90	0.339	0.824	72.7
180	0.79	0.345	0.830	72.4
200	0.71	0.352	0.837	72.1
220	0.63	0.358	0.843	71.8
240	0.57	0.365	0.850	71.5
260	0.52	0.371	0.857	71.1
280	0.47	0.378	0.863	70.8
300	0.44	0.384	0.870	70.5
320	0.40	0.391	0.876	70.2
340	0.37	0.397	0.883	69.9
360	0.34	0.404	0.890	69.6
380	0.32	0.410	0.896	69.3
400	0.30	0.417	0.903	68.9
420	0.28	0.424	0.909	68.6
425	0.28	0.425	0.911	68.6

Temperature °C	Viscosity mPa·s	Thermal Cond. W/m·K	Specific Heat kJ/kg·K	Density kg/m ³
-10	3.00	0.494	3.246	1204
0	2.50	0.504	3.271	1199
10	2.10	0.514	3.296	1195
20	1.80	0.524	3.320	1190
30	1.50	0.534	3.345	1186
40	1.30	0.544	3.370	1181
50	1.20	0.554	3.395	1177
60	1.00	0.564	3.420	1172
70	0.91	0.574	3.444	1167
80	0.81	0.584	3.469	1163
90	0.73	0.594	3.494	1158
100	0.66	0.604	3.519	1154
110	0.60	0.614	3.544	1149
120	0.55	0.624	3.568	1145
130	0.51	0.634	3.593	1140
140	0.47	0.644	3.618	1136
150	0.43	0.654	3.643	1131
160	0.40	0.664	3.668	1127
170	0.37	0.674	3.692	1122
180	0.35	0.684	3.717	1118
190	0.33	0.694	3.742	1113
200	0.31	0.704	3.767	1109
210	0.29	0.714	3.792	1104
218	0.28	0.722	3.811	1101

Vapor Pressure

Temperature		Vapor Pressure, psia				
°C	°F	HC-10	HC-20	HC-30	HC-40	HC-50
20	68	0.33	0.30	0.26	0.22	0.23
30	86	0.42	0.40	0.35	0.32	0.28
40	104	0.69	0.66	0.58	0.55	0.45
50	122	1.24	1.16	1.04	0.97	0.81
60	140	2.16	1.99	1.81	1.67	1.43
70	158	3.57	3.26	2.99	2.72	2.39
80	176	5.62	5.11	4.69	4.24	3.78
90	194	8.47	7.68	7.06	6.35	5.71
100	212	12.3	11.2	10.3	9.21	8.31
110	230	17.4	15.8	14.5	13.0	11.7
120	248	24.0	21.8	20.0	17.9	16.2
130	266	32.4	29.6	27.0	24.2	21.9
140	284	43.1	39.4	35.9	32.3	29.1
150	302	56.6	51.8	47.1	42.4	38.2
160	320	73.3	67.1	61.0	55.0	49.5
170	338	93.9	86.1	78.2	70.4	63.3
180	356	119.0	109.2	99.2	89.4	80.3
190	374	149.6	137.3	124.6	112.4	100.9
200	392	186.5	171.2	155.4	140.1	125.8
210	410	230.6	211.7	192.2	173.2	155.6
218	424	271.9	249.5	226.6	204.2	183.6