



Hydroclear Diamond Class™ Heat Transfer Fluids

Conoco Hydroclear Diamond Class™ Heat Transfer Fluids are premium-quality heat transfer fluids. The combination of Group II hydrocracked base oils and the latest proprietary additive chemistry has produced a family of petroleum-derived heat transfer fluids that rivals some synthetic fluids in stability and overall performance. In order to meet the demanding requirements of open- and closed-system liquid-phase heat transfer applications, Diamond Class™ Heat Transfer Fluids are offered in two forms: O/S “open system” and C/S “closed system.”

Applications

Hydroclear Diamond Class™ Heat Transfer Fluids O/S 32 and 46 are optimized for use in pressure-relieved and expansion tank-equipped liquid-phase heat transfer systems which are “open” and in which there is some possibility of contact between the heat transfer fluid and air in the system expansion tank. Because of this possible contact between the hot heat transfer fluid and air, the additive system is fortified with oxidation control additives to prevent oxidative degradation and deposits from building up in the system. The “O/S” fluids are rated for 550°F (290°C) continuous maximum bulk temperature, and as high as 600°F (315°C) intermittent maximum temperature.

Hydroclear Diamond Class™ Heat Transfer Fluids C/S 32 and 46 are optimized for use in pressure-relieved and expansion tank-equipped liquid-phase heat transfer systems that are “closed” to air contamination, are nitrogen-purged and thus in which there is little or no possibility of contact between the heat transfer fluid and air during normal operation. The additive system for the C/S fluids is fortified to prevent thermal degradation of the fluid in use. The “C/S” fluids are rated for 620°F (327°C) continuous maximum bulk temperature and as high as 650°F (343°C) intermittent maximum temperature.

Premium-Quality Heat Transfer Fluids

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Notes

- *The “C/S” fluids are optimized for long-life, low-deposit formation and high heat transfer performance in “closed” systems only. Similarly, the “O/S” fluids are optimized for open system use. Product mixing with competitive heat transfer fluids should be avoided.*
- *These fluids are for use in “hot oil” systems and are not to be used in “vapor phase” heat transfer units or in conjunction with materials such as water which can super heat and cause dangerous conditions.*

Outstanding Features

- System heat transfer efficiency is maintained
- Thermal stability reduces efficiency-robbing system deposits and particles
- Long life leads to less oil disposal, environmental waste
- Extended oil drains mean less maintenance and equipment downtime

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Hydroclear Diamond Class™ Heat Transfer Fluids
Typical Properties

	O/S	O/S	C/S	C/S
	ISO 32	ISO 46	ISO 32	ISO 46
Density, g/ml				
@ 60°F (15°C)	0.8624	0.8617	0.8657	0.8657
@ 400°F (204°C)	0.7593	0.7591	0.7662	0.7662
@ 500°F (260°C)	0.7339	0.7336	0.7409	0.7409
@ 600°F (316°C)	0.7101	0.7099	0.7166	0.7166
Color, ASTM D1500	<0.5	<0.5	< 0.5	< 0.5
Pour Point, ASTM D97				
°F	-44	-44	-44	-44
°C	-42	-42	-42	-42
Flash Point (COC), ASTM D92				
°F	455	470	465	485
°C	235	243	241	249
Fire Point, ASTM D92				
°F	520	485	—	—
°C	271	252	—	—
Auto-Ignition Point, ASTM DE659				
°F	675	684	687	703
°C	357	362	364	373
Coefficient of Thermal Expansion, vol%/°F (vol%/°C)	0.056 (0.102)	0.056 (0.102)	0.056 (0.102)	0.056 (0.102)

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Hydroclear Diamond Class™ Heat Transfer Fluids
Typical Properties

ISO Grade	0/S	0/S	C/S	C/S
	32	46	32	46
Viscosity, cSt, ASTM D445				
@ 104° F (40°C)	33.54	44.47	33.16	44.5
@ 212°F (100°C)	5.62	6.74	5.59	6.74
@ 400°F (204°C)	1.46	1.56	1.45	1.56
@ 500°F (260°C)	0.93	1.02	0.93	1.02
@ 600°F (316°C)	0.70	0.77	0.71	0.76
Thermal Conductivity, BTU/hr-ft-°F (W/m-K)				
@ 100°F (38°C)	0.082 (0.143)	0.082 (0.142)	0.082 (0.143)	0.082 (0.142)
@ 400°F (204°C)	0.077 (0.134)	0.077 (0.133)	0.077 (0.134)	0.077 (0.133)
@ 500°F (260°C)	0.075 (0.131)	0.076 (0.130)	0.075 (0.131)	0.076 (0.130)
@ 600°F (316°C)	0.074 (0.128)	0.074 (0.127)	0.074 (0.128)	0.074 (0.127)
Heat Capacity, BTU/lb-°F (kJ/kg-K)				
@ 100°F (38°C)	0.48 (1.99)	0.47 (1.94)	0.48 (1.99)	0.47 (1.94)
@ 400°F (204°C)	0.61 (2.52)	0.61 (2.51)	0.61 (2.52)	0.61 (2.51)
@ 500°F (260°C)	0.65 (2.71)	0.64 (2.70)	0.65 (2.71)	0.64 (2.70)
@ 600°F (316°C)	0.70 (2.91)	0.69 (2.89)	0.70 (2.91)	0.69 (2.89)
Vapor Pressure, psia (kPa)				
@ 100°F (38°C)	0.022 (0.15)	0.011 (0.08)	0.022 (0.15)	0.011 (0.08)
@ 400°F (204°C)	0.078 (0.54)	0.078 (0.54)	0.078 (0.54)	0.078 (0.54)
@ 500°F (260°C)	0.78 (5.40)	0.479 (3.3)	0.78 (5.40)	0.479 (3.3)
@ 600°F (316°C)	2.71 (18.70)	1.67 (11.5)	2.71 (18.70)	1.67 (11.5)
Neutralization Value, TAN, mg KOH/gm, ASTM D974	0.00	0.00	0.01	0.01
Carbon Residue, ASTM D524	<0.1	<0.1	< 0.1	< 0.1
Copper Corrosion @ 212°F (100°C), ASTM D130	1a	1a	1a	1a

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