

SYF 990 THERMOPLUS FG

Food Grade Thermic (NSF HT1 Certified)



PRODUCT INFORMATION

A Highly efficient, non-toxic, food grade heat transfer fluid that is NSF HT1 certified and safe for incidental food contact in food processing and pharma applications.

PRODUCT DESCRIPTION

A highly efficient, non-toxic, food grade heat transfer fluid that is safe for incidental food contact in food and pharmaceutical processing plants.

Made from severely hydro treated base stocks, SYF 990-THERMOPLUS FG Heat transfer fluid has outstanding thermal and oxidation stability allowing operation at high temperatures for extended periods. It is non-hazardous, non-toxic, water white and odourless.

SYF 990-THERMOPLUS FG heat transfer fluid complies with US FDA regulations 21 CFR 178.3620(b) concerning non-food articles intended for use in contact with food. And, certified by the NSF International as HT1 lubricants z (incidental food contact), for use in food and pharmaceutical plants and meets DIN 51522-Q standard.

It is NOT approved for use as a direct food additive.

SYF 990-THERMOPLUS FG Heat transfer fluid is also fouling resistant. All organic heat transfer fluids undergo thermal degradation over time and conventional synthetic fluids or low-quality oils will form soft sludge that eventually coats all system surfaces and can harden into coke. Because the coating acts as an insulator, heat transfer rates are reduced resulting in longer heat up time, lower production rates, change in control response and, in extreme cases, burnout of heater tubes or electrical elements.

With SYF 990-THERMOPLUS FG Heat transfer fluid, these problems disappear. As it degrades, it produces small carbon particles that do not stick to system surfaces, but remain suspended and are easily drained off or filtered out. Heat transfer surfaces are left clean, meaning system performance remains constant.

SYF 990-THERMOPLUS FG Heat transfer fluid provides excellent heat transmission and efficiency at the relevant operating temperatures. This ensures high heat transfer rates requiring limited pumping energy. It also has a low vapour pressure, greatly reducing evaporation and cavitation, eliminating the need for high pressure piping and equipment.

Used fluid may be disposed of through several environmentally acceptable methods, such as used oil recycling or heavy fuels burning. Talk to us about our used oil reprocessing services.

NOTE: When draining hot fluid after flushing, normal safety precautions should be taken to prevent burns and the risk of fire.

APPLICATIONS

SYF 990-THERMOPLUS FG Heat transfer fluid is recommended for use in non-pressurized, indirectly heated, closed loop, liquid phase heat transfer systems used in food processing operations at temperatures up to 325°C (618°F).

Petrelplus Inc.

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SERVICE CONSIDERATIONS

SYF 990-THERMOPLUS FG Heat transfer fluid provides excellent service under normal operating conditions up to the recommended temperatures. However, the fluid life will depend upon system design and operational practice.

Correct fluid handling may help to sustain a life-span for this oil. Handling considerations include:

- Air bubbles in the circulation system will cause cavitation and fast ageing of the fluid. For this reason, gas bubbles need to escape into the expansion tank or need to be vented through vent/bleed valves;
- Ageing due to oxidation can be catalytically influenced by materials, such as water, dust, rust, and other fouling. Hence, it is required that in new systems all fabrication debris is removed before filling;
- Before refilling an existing system, a complete draining of the old fluid is required. Complete draining from all system low points is required and if complete draining is not possible at least one full charge of fresh heat transfer fluid should be used to flush the system. Water based cleaners must be completely rinsed with fresh water. Residual water should be removed by draining and then, purging with hot, dry nitrogen. Boiling off all residual water in the expansion tank is not recommended since it will cause fluid degradation;
- During the start-ups, thermal shocking from accelerated temperature increases needs to be avoided; and,
- Always use fresh fluid to top off system. Fluid burped out the vent or collected in drip pans should be discarded.

An analytical routine check of the heat transfer medium, while it is hot and circulating, should be part of the routine maintenance plan. This check should be carried out at least once a year, preferably three to four times a year. Testing can be carried out by Global Heat Transfer- via the Petrelplus lifecycle management programme- to all users of

SYF 990-THERMOPLUS FG Heat transfer fluids. The thermal fluid parameters which are measured will allow our experts an accurate assessment of the condition of the fluid. This way, Petrelplus testing and analysis programmes ensure prolonged and trouble-free operation of the fluid. Changes to the condition of the fluid are quickly detected and managed with

PetrelPlus and can be avoided in time before more extensive damage (to both system and fluid) and further costs are incurred.

Phone: +91 95098-25457 to ask about Petrelplus preventative maintenance programmes and heat transfer fluid testing and analysis

COMPATIBILITY

While unused SYF 990-THERMOPLUS FG Heat transfer fluid is incompatible with other NSF International HT1 accredited heat transfer fluids, for use in food and pharmaceutical plants, prior laboratory testing is recommended before topping-up the system with this product. Adding SYF 990-THERMOPLUS FG Heat transfer fluid as a top-up to used fluids may help to increase fluid life. Global Heat Transfer can assist with lab testing. Please contact our technical team on +91 95098-25457 for more information

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HEALTH AND SAFETY

SYF 990-THERMOPLUS FG Heat transfer fluid presents no hazard to health or safety under good standards of industrial and personal hygiene. Full details of health and medical procedures are contained in the Material Safety Data Sheet.

Please contact our technical team on +91 95098 25457 for more information.

PHYSICAL AND CHEMICAL PROPERTIES

PROPERTY	TEMPERATURE			
	5°C (60°F)	38°C (100°F)	260°C (500°F)	316°C (600°F)
Density, kg/L (lb./ft ³)	0.868 (54.2)	0.854 (53.3)	0.716 (44.7)	0.681 (42.5)
Thermal Conductivity, W/m K (BTU/hr.°F.Ft)	0.138 (0.080)	0.136 (0.079)	0.124 (0.072)	0.121 (0.070)
Heat Capacity, kJ/kg K (BTU/lb. °F)	1.87 (0.45)	1.94 (0.46)	2.69 (0.64)	2.88 (0.69)
Vapour Pressure, kPa (psia)	0.00 (0.00)	0.00 (0.00)	3.01 (0.44)	14.28(2.05)

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PROPERTY	METHOD	TEST RESULTS
NSF Registration No. 161941 Ht1	-	-
Color	ASTM D1500	Color less
Flash Point, COC, °C/ °F	ASTM D92	210/410
Pour Point, °C/°F	ASTM D5950	45
Fire Point, °C /°F	ASTM D92	249/480
Auto ignition Temperature , °C/°F	ASTM E659	350/482
Viscosity , est at 40°C	ASTM D445	27 to29.8
100°c		5.2 to 5.3
Neutralization Value, TAN, mg KOH/g	ASTM D664	NTR
Coefficient of Thermal Expansion,%/°C (%/°F)		.0915(0.0508)
Distillation Range, °C (°F)	ASTM D2887	
10%		383(721)
50%		431(808)
90%		478(892)
NSF Certification (Registration No)		161941
Odor		Nearly Odorless
Maximum Film Temperature		650°F (343°C)
Maximum Operating Temperature (Fired Heaters)		600°F (316°C)
Maximum Operating Temperature (Other Heaters)		630°F (332°C)
Minimum Operating Temperature, 20 cPs (20 mPa-s)		97°F (36°C)
Minimum Start-Up Temperature, 300 cPs (300 mPa-s)		24°F (-4°C)
Density @ 60F/15.5C, lb/gal (kg/m3)		7.4 (880)
Pensky-Martens Closed Cup Flash Point (ASTM D93)		> 300°F (>149°C)
Average Boiling Point (14.7 psia/101 kPa)		700°F (371°C)
Vapor Pressure @ Maximum Operating Temperature, psia (kPa)		5.6 (38)
% Volumetric Expansion Over Operating Range, per 100°F (°C)		6.0 (10.8)
Average Molecular Weight		330

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