Finnexx Caloria Oils

Heat Transfer Oil

PRODUCT DESCRIPTION

Highly refined, thermally stable paraffinic petroleum oil formulated for use as a heat transfer fluid in both closed and open heat transfer systems with forced circulation.

CUSTOMER BENEFITS

- Maximum energy efficiency
  Excellent heat transfer properties enable easy circulation and efficient transfer of heat.

- Resists deposit formation
  Outstanding oxidation and thermal stability resists formation of sludges and coke deposits, providing long oil service life.

- Rapid response at start-up
  Low temperature flow characteristics allow prompt circulation.

- Economical low pressure operation
  Low vapor pressure at elevated temperatures minimizes evaporation, vapor lock and pump cavitation, allowing efficient operation at lower system pressures, avoiding the need for expensive high pressure piping and heat exchangers.

APPLICATIONS

May be used in heat transfer systems in industrial drying applications, rubber and plastics manufacture, heating of asphalt and fuel oil tanks, food processing, cooking and canning, factory heating, manufacture of soap, resin, glue, dyes, paints, pharmaceuticals and grease, wood laminate, fibre board and veneer manufacture, agricultural heating and drying, and chemical, petroleum and wax processing.

- Open systems operating at temperatures up to 200°C
- Closed systems (sealed with cold oil or inert gas) operating at bulk oil temperatures up to 320°C.

For long, trouble-free service in closed systems, the maximum film temperature on the heater surfaces should be limited to 340°C.

Systems must have forced circulation of the heat transfer fluid.

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TYPICAL TEST DATA

Characteristic	Test methods	VG 46
Kinematic viscosity at 40°C, mm²/s	ASTM D445	44.7
Viscosity Index	ASTM D2270	>100
Density at 20°C, kg/l	ASTM D4052	0.864
Flash Point COC, °C	ASTM D92	>200
Pour Point, °C	ASTM D97	<-6
Air release @ 50°C, min.	ASTM D3427	2.3
TAN, mgKOH/g	ASTM D974	0.1
Foam All Seq, ml	ASTM D892	0
Demulsibility at 54 °C, min.	ASTM D1401	40-40-0(10)

Values are typical of production but will be subject to variation.

Health & Safety Note – Always maintain good levels of personal hygiene when handling mineral oils. Wear protective clothing/gloves. Wash hands and skin areas where contact has occurred and avoid ingestion. See applicable Material Safety data Sheet for further information.

PRODUCT MAINTENANCE AND HANDLING

SERVICE CONSIDERATIONS
Certain precautions should be taken to ensure satisfactory performance of heat transfer fluids in service:

System Cleanliness
The heat transfer system, whether new or used, should be thoroughly cleaned and flushed with clean oil before being placed in service. Sometimes this cleaning will require the use of chemical cleaners, usually in the form of an alkaline cleaning agent. These products are supplied, and are usually applied, by specialist industrial cleaning companies. In use they are often mixed with very hot water and pumped continuously through the system to remove deposits. If such chemical cleaners mixed with water are used, all traces of water must be removed from the system prior to it being brought back into service. Hot air blowing will usually achieve this.

Heat Transfer System Materials
Iron and steel are the preferred materials for heating system construction. The use of copper and its alloys should be avoided. The heater should be constructed with a

minimum of refractory to improve thermal response, and to reduce heat-soak into the fluid in case of pump failure.

System Seal
Hot heat transfer fluid must be prevented from contacting the air in the expansion tank since air will cause rapid oxidation. To accomplish this, the expansion tank should be located and piped so that fluid in it remains cool (below 55°C).

Hot Spots
The system should be free of hot spots which will degrade the fluid and cause the formation of hard carbon deposits on the system surfaces. The fluid should be circulated through the heater with a fully turbulent flow, with a surface speed between 2 and 3 metres per second, depending on surface geometry and operating temperature.

The system should be designed so that:

1. The circulating pump is started before heat is applied to the heater
2. The circulating pump runs for a period after the heater is turned off
3. The heater will shut off in the event of circulating pump failure or the development of excessive temperatures.

Full fluid flow must always be maintained through the heater, regardless of the conditions at the heat exchanger. The system should be designed for the bypass of fluid at the heat exchanger if the full fluid flow is not required there. This will ensure that the full fluid of flow is retained at the heater.

In-Service Oil Testing
The viscosity, acid number, flash point and insolubles content of the in service fluid should be monitored regularly. Samples should be taken within a few days of start-up, and every six months afterward. Generally, it is the rate of change of in-service fluid properties which indicates the suitability of the fluid for further service.