



A high quality semi-synthetic heat transfer fluid with excellent thermal stability and resistance to thermal cracking and oxidation in solar applications.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name

Globaltherm® Omnipure
Heat transfer fluid

Company Information

Globaltherm, Cold Meece
Estate, Cold Meece, Stone,
Stafford, ST15 0SP, UK

Emergency telephone

+44 (0) 1785 760555

Web

www.globaltherm.org

2. PRODUCT DESCRIPTION

Globaltherm® Omnipure

is a high quality semi-synthetic heat transfer fluid that is paraffinic based, transparent, colourless, odourless, refined and treated to the highest purity requirements required in the heat transfer sector.

Globaltherm® Omnipure

is a non-toxic thermal fluid and therefore suited to oleothermic plants, such as solar concentrator panels, distributed over large areas and where the fluid may encounter the ground if a leak should occur.

Its physical-chemical properties mean it can be used in the oleothermic plants such as the production and/or packaging of products intended for feeding humans.

Globaltherm® Omnipure

has been designed to operate at high temperatures more than 300 degrees Celsius where flow must be maintained and interruptions avoided helping extend the life of the fluid and the circuits of the solar concentrating plant.

Globaltherm® Omnipure

has excellent chemical and thermal stability and resistant to thermal cracking and



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SEMI-SYNTHETIC THERMAL FLUID
For use in Concentrated Solar Power Applications

PRODUCT INFORMATION

oxidation. 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 Globaltherm® Omnipure 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.

Globaltherm® Omnipure 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.

Other key features include a high distillation point (2%), a high flash point, low vapour pressure, it is chemically inert and it has a low pour point and good low temperature pumpability.

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 all-inclusive waste oil management services.

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

3. APPLICATIONS

Globaltherm® Omnipure Heat Transfer Fluid is recommended for use in non-pressurized, indirectly heated, closed loop, liquid phase heat transfer systems used in oleothermic plants including the circuits of solar concentrating panels of a solar plant.

4. SERVICE CONSIDERATIONS

Globaltherm® Omnipure 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.



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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 Thermocare® lifecycle management programme - to all users of Globaltherm® 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, Thermocare® 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 Thermocare® and can be avoided in time before more extensive damage (to both system and fluid) and further costs are incurred.

Phone: +44 (0) 1785 760555; fax: +44 (0) 1785 760444 to ask about Thermocare® preventative maintenance programmes and heat transfer fluid testing and analysis.

5. COMPATIBILITY

No compatibility data available.

6. HEALTH AND SAFETY

Globaltherm® Omnitech 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 the technical team on +44 (0) 1785 760555 for more information.



7. PHYSICAL AND CHEMICAL PROPERTIES

Parameter	Unit	Code (ASTM/ISO/DIN)	Result
Appearance	N/A	N/A	Colourless transparent liquid with no odour
Operating Range	°C (°F)	N/A	-20 to 326 (-4 to 619)
Density @ 25°C	kg/m ³	ASTM D4052	881
Kin. Viscosity 40°C	mm ² /s (cSt)	ASTM D445	29.8
Kin. Viscosity 100°C	mm ² /s (cSt)	ASTM D445	5.2
Flash Point PMC	°C	ASTM D93	210
Flash Point COC	°C	ASTM D92	216
Coefficient of thermal expansion	°C	NTR	0.00089/°C
Autoignition Point	°C	ASTM E659	350
Pour Point	°C	ISO 3016	-29
Neutralisation Nr (acid), TAN	mgKOH/g	ASTM D974	NTR
Maximum Bulk Temperature	°C	NTR	326
Maximum Film Temperature	°C	NTR	343
Boiling Point at 1013 mbar	°C	NTR	371
Average Molecular Weight	NTR	NTR	350
Moisture Content	PPM	ASTM D6304	<100

Note: The information given in the typical data does not constitute a specification but is an indication based on current production and can be affected by allowable production tolerances. The right to make modifications is reserved. This edition supersedes all previous editions and information contained within them. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product. Abbreviations: OC, open cup test; COC, Cleveland open cup test; and, NTR, no test reported.

8. OTHER INFORMATION

PI Creation Date 7th April 2015 (#1) Revision date NA