



globaltherm®

C

HIGH PERFORMANCE SYNTHETIC FLUID
For use in Liquid Phase Closed Loop Systems

PRODUCT INFORMATION

Wide temperature range high performance, synthetic heat transfer fluid, for use in the liquid phase in closed heat transfer systems.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name
Globaltherm® C
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

Covering a wide temperature range from -90 to 300°C in a heat transfer circuit with a single heat transfer medium represents a challenge. To solve this problem, different

physical parameters of the medium should be optimally coordinated. Globaltherm® C Heat transfer fluid is the heat transfer fluid from the Globaltherm®, which meets these conditions.

Globaltherm® C Heat transfer fluid is a high performance, synthetic organic heat transfer fluid, designed especially for use in the liquid phase in closed heat transfer systems with forced circulation.

Because of the wide application range between -90 to 153°C in unpressurized circuits and its superior physical and thermal properties in this temperature range.

Globaltherm® C Heat transfer fluid is suited to a multitude of heat transfer processes.

Heating and cooling circuits can be simultaneously operated. In pressurized systems Globaltherm® C Heat transfer fluid is also applicable above 153°C. The upper use limit corresponds to a heater outlet temperature of 300°C and the film temperature should not exceed 320°C.

Globaltherm® C is the ideal heat transfer fluid for heating and cooling in the most varied fields of application e.g. for multi-purpose-facilities in the fine chemicals, speciality chemicals and pharmaceutical industry.



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Obviously the same applies to systems in which one heat transfer fluid supplies various consumers, each requiring a different temperature level.

Globaltherm® C Heat transfer fluid is an inert, aromatic hydrocarbon has excellent thermal stability up to operating temperatures of 300°C, even after many years of use. Because of its superior thermal conductivity Globaltherm® C Heat transfer fluid can be used in the temperature range from -90 to 300°C. Even at very low operating temperatures the circulation pumps require comparatively little driving power due to the low viscosity of the fluid.

Globaltherm® C Heat transfer fluid can be easily circulated by single stage centrifugal pumps equipped with mechanical seals at temperatures as low as -90°C. Canned motor pumps and centrifugal pumps can likewise be installed in the heat transfer circuit.

It is advantageous to operate Globaltherm® C Heat transfer fluid circuits with a little inert gas back pressure of 50-200 mbar at the expansion vessel.

Nitrogen has proven to be suitable as an inert gas. When operating the heat transfer system at different temperatures the excess pressure of the nitrogen prevents the entry of air moisture into the system during cooling. At higher temperatures, inert gas blanketing provides the best protection against changes in the heat transfer fluid caused by oxidation. At operating temperatures above the boiling point of Globaltherm® C Heat transfer fluid it is necessary to apply an inert gas backpressure which is sufficient to keep the heat transfer medium in the liquid state and prevent vaporization via the expansion vessel.

3. APPLICATIONS

Globaltherm® C Heat transfer fluid is intended for use as heat-transfer medium in a closed plant.

4. SERVICE CONSIDERATIONS

Globaltherm® C Heat transfer fluid is just one of the comprehensive range of high performance heat transfer fluids by Globaltherm for the temperature range from -90 to 600°C.

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.



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5. COMPATIBILITY

If used according to the recommended operation parameters (temperature, pressure) in leak proof systems, Globaltherm® C Heat transfer fluid does not corrode the usual metallic materials used in the construction of plants and machinery. For example: stainless steel, aluminium, titan, carbon steel, hastelloy, cast steel, copper, bronze. Synthetic rubber and materials in which synthetic rubber has been processed, swell on contact with Globaltherm® C Heat transfer fluid. The fluid is compatible with materials for seals frequently used in heat transfer plants such as gaskets made by PTFE, fluoroelastomers, Viton and Kalrez. The gasket manufacturers' recommendations regarding heat resistance and mechanical strength should be considered. Gaskets should ensure good sealing even during temporary operation of the system at stress limits. When the plant is running under extreme conditions, for example at constantly high temperatures or under frequent changes in temperature, then a completely sealed system is of great importance. In this case we recommend gaskets made from graphite, preferably with a metal inlay.

6. HEALTH AND SAFETY

When handling organic chemicals, the usual guidelines and recommendations should be observed. Globaltherm® C Heat transfer fluid is intended for use in closed systems, therefore the leakage of heat transfer fluid from the plant must be prevented or minimised for safety and environmental reasons using suitable design measures. Details on toxicological, ecological and safety aspects of the heat transfer fluid are to be found in the latest Safety Data Sheet for Globaltherm® C Heat transfer fluid.

7. PHYSICAL AND CHEMICAL PROPERTIES

Parameter	Unit	Code (ASTM/ISO)	Result
Appearance at 20 °C	N/A	Visual	Liquid, clear
Ethylbenzene content	% by volume	GC	≤0.5
Water	% by mass	DIN 51777	≤0.03
Density at 20°C	g/ml	DIN 51757	0.855 - 0.865
Viscosity at 20°C	mm ² /s	DIN 51562	0.5 - 1.0
General product description	Unit	Code (ASTM/ISO/DIN)	Result
Boiling range at 1013 mbar	°C	ASTM D 1078	about 153
Pour point	°C	DIN ISO 3016	< -90
Flash point	°C	EN 22719	about 31
Ignition temperature	°C	DIN 51794 (ASTM D659)	about 420
Permissible heater outlet temperature	°C	NTR	300
Permissible heater film temperature	°C	NTR	320
Pumpability limit	°C	NTR	NTR

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.



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8. OTHER INFORMATION

Storage and transport

Globaltherm® C Heat transfer fluid is delivered in road tankers or 177 kg steel drums. During transport of the heat transfer fluid the national and international regulations concerning the shipment of dangerous goods should be heeded. References for this can be taken from the Safety Data Sheet.

Globaltherm® C Heat transfer fluid has a virtually unlimited storage life when stored in closed containers made of steel or aluminium. No special safety precautions are required during storage. When handling Globaltherm® C Heat transfer fluid, during filling and operation of a heat transfer circuit, care should be taken that the fluid cannot enter the soil or the sewer system. If necessary, and in compliance with official regulations, used Globaltherm® C Heat transfer fluid recycled or incinerated for the production of energy.

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