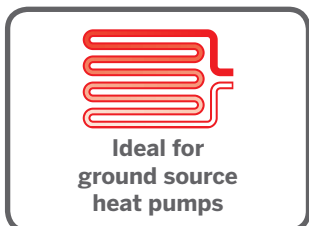


## Sentinel R500C Thermal Fluid Concentrate

Concentrated heat transfer fluid for ground source heat pump systems

To provide exceptional thermal transfer with superior stability and protection against corrosion and deposits as well as resistance to degradation, ground source heat collector loops should be filled with diluted R500 Transfer Fluid Concentrate.

- **Provides optimal frost protection**  
Built in frost protection depending on level of dilution.
- **Chemically and thermally stable components**  
Resists degradation to extend fluid life and thereby reduces cost of system operation.
- **Superior corrosion and scale inhibition**  
Prolongs system life by protecting all metals commonly found in heat collector circuits from corrosion and deposits.
- **Safe to use**  
Based on propylene glycol. Non-toxic and biodegradable.



### The Sentinel System

Lifetime protection for heating and hot water systems using the best practice process of...



**CLEAN**  
WITH R800  
CLEANING AND  
FLUSHING FLUID



**PROTECT**  
WITH R700  
SANTISER  
AND BIOCID



**MAINTAIN**  
WITH  
FROSTCHECK  
TEST KIT

## Application

Sentinel R500C Thermal Fluid is essential for the thermal efficiency and long-term protection of ground source heat pumps. The propylene glycol ensures highly efficient heat transfer and frost protection of the circuit even to  $-40^{\circ}\text{C}$  or lower. The unique anti-corrosion formulation contains inhibitors which protect all common system metals against corrosion thereby prolonging lifespan. The product is also especially formulated to prevent fouling of the surfaces of heat exchangers and maintaining thermal performance. Sentinel R500C is compatible with materials commonly found in typical ground source heat pumps.

## Circuit Filling

Sentinel R500C Thermal Fluid is a thermal fluid concentrate and before filling the ground loop, will require pre-dilution on site to an appropriate level for the desired frost protection. Sentinel R500C should be pre-diluted with town mains water in a ratio of one part Sentinel R500C to a maximum of nine parts water. R500C provides frost protection from  $-4^{\circ}\text{C}$  to  $-40^{\circ}\text{C}$  and beyond depending on extent of dilution. Test for glycol concentration with Sentinel FrostCheck Test Kit.

It is important that the system equipment manufacturers' instructions be carefully followed when cleaning or filling a ground source heat pump and ground loop circuit. When the ground source heat pump system is filled with diluted Sentinel R500C all the entrained air must be removed before the system is operated. Sentinel R500C must not be mixed with other thermal fluids. Dilute using towns mains water. Important: ensure pre-dilution of R500C with thorough mixing before adding to the ground loop. If losses occur the thermal fluid in the system must be replenished with Sentinel R500C diluted to the appropriate level.

Ensure that the manufacturers' recommendations state that all the seals and connectors used in the equipment are resistant up to the maximum operating temperature of the thermal fluid. It is important to ensure the circuit has been cleansed and flushed before filling with diluted R500C. Sentinel highly recommend the system is treated with Sentinel R700 Sanitiser and Biocide before filling with diluted R500C to ensure there is no bacterial contamination present that can degrade glycol over time.

## Frost Protection

Please note that the frost protection figure refers to a 'setting point' temperature down to which Sentinel R500C concentration is sufficient to prevent bursting of pipework but not necessarily high enough to maintain the fluid in a pumpable state.

This figure is the 'Setting Point' as measured using the DIN 51583 method (replaced by ISO 3016). The 'Setting Point' is the temperature at which the fluid solidifies.

The temperature figure read from the refractometer corresponding to the percentage glycol figure is the onset of the freezing point as measured using the ASTM D1177 method.

For a propylene glycol/water mixture, at temperatures between its 'Freezing Point' and its 'Setting Point', the mixture becomes progressively more difficult to pump. A comparison chart of 'Freezing Point' and 'Setting Point' for propylene glycol/water mixtures is shown below.

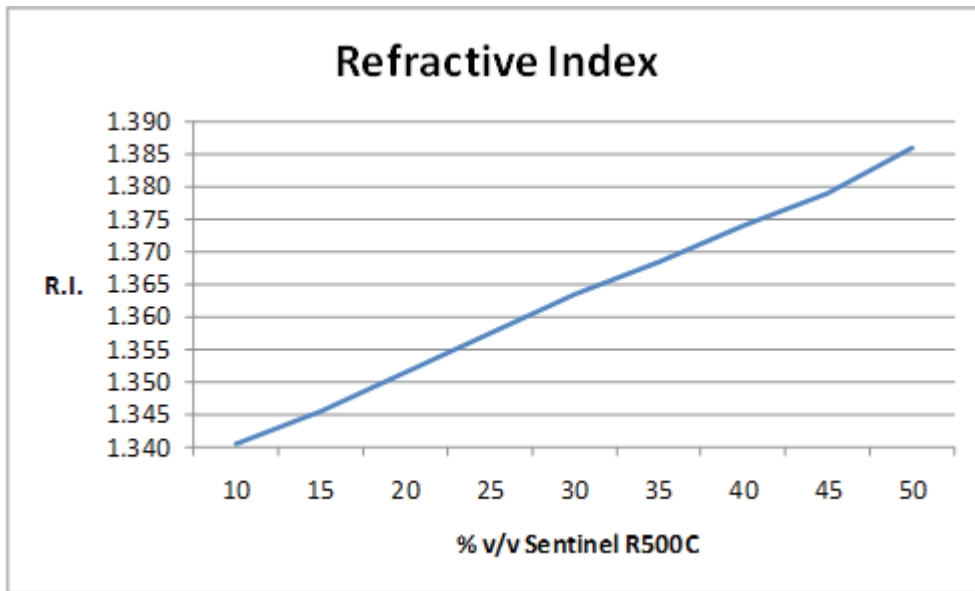
% Sentinel R500C (v/v)	0	5	10	15	20	25	30	35	40	45	50
Freezing Point ( $^{\circ}\text{C}$ )	0	-1	-2	-4	-6	-9	-13	-17	-21	-26	-32
Setting Point ( $^{\circ}\text{C}$ )	0	-2	-5	-9	-12	-20	-28	-37	-	-	-

### Sentinel R500C Dilution Guide Table

Setting Point* ( $^{\circ}\text{C}$ ) (ISO3016)	-	-37	-28	-20	-12	-9	-5
R500C (%volume)	40	35	30	25	20	15	10
Water (%volume)	60	65	70	75	80	85	90

\*Frost protection is assured at R500C concentrations of 40% or above.





## Physical properties

<b>Appearance:</b>	Clear, blue liquid
<b>Density (20 °C):</b>	1.037 g/cm <sup>3</sup>
<b>pH value (33% in water):</b>	8,5 (approx.)
<b>R.I.:</b>	1.338 (approx.)

## Safety precautions

The information provided below enables compliance with the Control of Substances Hazardous to Health Regulations. A full Safety Data Sheet is available upon request.

<b>Description</b>	<b>Heat transfer fluid for ground source heat pump circuits</b> Propylene glycol containing corrosion inhibitors.	
<b>Handling</b>	Avoid contact with skin and eyes. Keep out of reach of children and animals. Wash out empty container thoroughly with water before disposal.	
<b>Storage</b>	Keep container tightly closed. Store in cool well ventilated area.	
<b>Spillage</b>	Flush spillage with plenty of water and wash to waste.	
<b>First aid</b>	Skin Exposure:	Wash immediately with plenty of water. If irritation develops, seek medical attention.
	Eye Exposure:	Flush immediately with plenty of running water. Keep eyelids apart. Seek medical advice.
	Ingestion:	Rinse mouth with water. Do NOT induce vomiting! Seek medical advice.
<b>Additional</b>	Not considered hazardous to health. Non-flammable.	

The use of Sentinel water treatment is endorsed by the industry's major international manufacturing companies\*



### Sentinel Performance Solutions Ltd

7650 Daresbury Park, Warrington, Cheshire, WA4 4BS, United Kingdom.  
Tel: +44 (0) 1928 704 330 www.sentinelprotects.com



@SentinelHQ



SentinelCPM

