



GREENWAY® NEO HEAT PUMP



Non-contractual photo

GREENWAY® NEO HEAT PUMP is a **READY-TO-USE** heat transfer fluid based on **1,3 PROPANEDIOL** and corrosion inhibitors, particularly suitable for geothermal ground source and aerothermal Air/Water heat pump systems.

The 1,3 Propanediol, comes from renewable plant-based materials, and has the advantage of considerably reducing the risk of polluting the ground or the atmosphere in the event of a system leak.

The formulation of **GREENWAY® NEO HEAT PUMP** is free of Borax, a Toxic additive classified as per the 30th European ATP (Adaptation to Technical Progress).

GREENWAY® HEAT PUMP provides effective protection against freezing and against corrosion of metals in different circuits (steel, aluminium, copper, brass, solder, etc.). It prevents the formation of sludge in the circuit which could clog up the buried circuit.

The corrosion inhibitor technology used in **GREENWAY® HEAT PUMP** is organic, based on neutralised carboxylic acids, without sodium borate which is classified as toxic, phosphates, nitrites or amines. These anti-corrosion agents provide long lasting protection.

GREENWAY® HEAT PUMP is bacteriostatic and therefore prevents bacterial growth in the circuit.

GREENWAY® NEO HEAT PUMP -25 is authorised by the French health administration (Direction Générale de la Santé), according to the directives of the French regulatory agency ANSES (formerly AFSSA), as a heat transfer fluid for thermal processing in simple exchange systems for sanitary water production.

GREENWAY® NEO HEAT PUMP is also approved by Belgaqua, the Belgian federation for the water sector, according to the standard NBN-EN 1717 as a fluid category 3.

We offer a ready-to-use solution:

GREENWAY® HEAT PUMP -25: Freezing point of -25°C

Please contact us for the concentrated product



1. PHYSICAL AND CHEMICAL PROPERTIES OF GREENWAY® NEO HEAT PUMP

Appearance; Green liquid

pH (AFNOR NF T 90 008 / ASTM D 1287) 8 to 8.5

Alkaline Reserve (AFNOR NF T 78-101 / ASTM D 1121)
(ml HCl N/10 for 20 ml of GREENWAY® NEO HEAT PUMP) ≥ 3 ml

Freezing point °C (AFNOR NF T 78-102 / ASM D 1177)..... - 25 ± 2°C
(Formation of a crystalline mix and not a compact mass)

Boiling point °C (AFNOR NF R 15-602-4 / ASTM D 1120)..... 104 ± 2°C

For uses at temperatures above boiling point and to prevent any boiling in the system, GREENWAY® NEO HEAT PUMP must only be circulated under pressure in closed, sealed circuits.

| Temperature (°C) | Density (kg/m ³) | Kinematic viscosity (cSt) | Specific heat (kJ.kg ⁻¹ .K ⁻¹) | Thermal conductivity (Wm ⁻¹ .K ⁻¹) |
|------------------|------------------------------|---------------------------|---|---|
| - 20 | 1,058 | 40.2 | 3,39 | 0.393 |
| - 10 | 1,052 | 21.2 | 3,42 | 0.402 |
| 0 | 1,047 | 11.6 | 3,46 | 0.412 |
| + 10 | 1,042 | 7.1 | 3,49 | 0.422 |
| + 20 | 1,037 | 4.5 | 3,53 | 0.431 |
| + 30 | 1,032 | 3.1 | 3,56 | 0.439 |
| + 40 | 1,029 | 2.3 | 3,58 | 0.447 |
| + 50 | 1,026 | 1.8 | 3,60 | 0.455 |
| + 60 | 1,023 | 1.5 | 3,62 | 0.461 |
| + 70 | 1,020 | 1.1 | 3,64 | 0.468 |
| + 80 | 1,017 | 0.90 | 3,66 | 0.473 |
| + 90 | 1,013 | 0.80 | 3,69 | 0.477 |
| + 100 | 1,010 | 0.70 | 3,71 | 0.481 |
| + 110 | 1,008 | 0.70 | 3,74 | 0.484 |
| + 120 | 1,006 | 0.70 | 3,76 | 0.485 |
| + 130 | 1,003 | 0.60 | 3,80 | 0.486 |
| + 140 | 1,001 | 0.60 | 3,84 | 0.486 |
| + 150 | 998 | 0.60 | 3,87 | 0.485 |
| + 160 | 995 | 0.50 | 3,91 | 0.482 |
| + 170 | 991 | 0.50 | 3,93 | 0.479 |
| + 180 | 987 | 0.50 | 3,96 | 0.474 |
| + 190 | 983 | 0.40 | 3,98 | 0.469 |
| + 200 | 978 | 0.40 | 4,02 | 0.462 |

Relevant standards: AFNOR NF R 15-602-1 / ASTM D 1122 (density)



2. PROTECTION OF METALS BY GREENWAY® NEO HEAT PUMP

As a comparison, the table below shows the corrosion of several metals in tap water and GREENWAY® NEO HEAT PUMP respectively. For information, the table shows the performance requirements defined by standards AFNOR NF R 15-601 and ASTM D 3306 for coolant liquids.

| Metals | Weight loss (mg / test piece) | Limits of the standard NF R 15-601 | Limits of the standard ASTM D 3306 |
|-----------|-------------------------------|------------------------------------|------------------------------------|
| Copper | ± 2 | [- 5; +5] | [- 10; +10] |
| Solder | ± 3 | [- 5; +5] | [- 30; +10] |
| Brass | ± 2 | [- 5; +5] | [- 10; +10] |
| Steel | ± 1 | [- 2.5; +2.5] | [- 10; +10] |
| Cast iron | ± 2 | [- 4; +4] | [- 10; +10] |
| Aluminium | ± 7 | [- 10; +20] | [- 30; +30] |

Standards governing test method: AFNOR NF R 15-602-7 / ASTM D 1384

3. PRESSURE LOSS

When using GREENWAY® NEO HEAT PUMP in an installation, account must be taken of the viscosity of the aqueous solution to calculate pressure losses.

4. RECOMMENDATIONS FOR THE IMPLEMENTATION OF GREENWAY® NEO HEAT PUMP

It is strongly recommended to conduct thorough cleaning of an installation before filling with GREENWAY® NEO HEAT PUMP. If the circuit contains abundant deposits of metal oxides in particular, we recommend using Dispersant D*.

The procedure is as follows:

- Quickly drain the installation at the lowest point after letting the water circulate for one to two hours.
- Prepare a solution of DISPERSANT D* in water (20 g/litre) in advance,
- Add the resulting solution to the installation and let the product circulate for at least two hours,
- Carefully rinse with plenty of clean water.

Cleaning may need to be repeated, depending on the state of the circuit. It is important to drain and rinse thoroughly with water.

In the case of an old installation with significant sludge build-up, you can clean using Thermonett* Sludge Remover. *Contact your Climalife sales person.*

GREENWAY® NEO HEAT PUMP must not be used with galvanized steel.

* Marketed by **Climalife**.

* *The data given in this document are purely indicative and do not constitute a sales specification.*

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