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GREENWAY® NEO SOLAR ready to use

Non contractual photo

GREENWAY® NEO SOLAR is a **READY-TO-USE heat transfer** fluid based on **1,3 PROPANEDIOL** from renewable plant based materials and with corrosion inhibitors. It is particularly suitable for sanitary hot water production in solar thermal systems for medium temperatures panels and high temperature vacuum tubes.

Specific features of GREENWAY® NEO SOLAR:

Its formulation without biocide or volatile organic compounds is free of Borax; a toxic additive according to the 30th European ATP (Adaptation to Technical Progress).

GREENWAY® NEO SOLAR 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 can clog up solar collectors.

The low degradability slows its ageing and allows a longer lifetime of the installation during periods of stagnation, with a reduction in the “tarring” of collectors and circuits. **GREENWAY® NEO SOLAR** degrades three times more slowly than a 50% concentrated solution of mono propylene glycol at +150°C for 150 hours.

The corrosion inhibitor technology is organic, based on neutralised carboxylic acids, without phosphates, nitrites or amines. These anti-corrosion agents provide long lasting protection.

GREENWAY® NEO SOLAR is bacteriostatic and therefore prevents bacterial growth in a circuit.

GREENWAY® NEO SOLAR is **authorised by the French health administration (Direction Générale de la Santé), according to the directives of the French regulatory agency ANSES,** as a heat transfer fluid for thermal processing in simple exchange systems for sanitary water production and is approved by **Belgaqua, (**the Belgian federation for the water sector), according to the standard NBN-EN 1717 as a fluid category 3.

Two ready-to-use solutions and a concentrate are available:

GREENWAY® SOLAR -25: Freezing point of -25°C
GREENWAY® SOLAR -30: Freezing point of -30°C

Please contact us for the concentrated product.

1. PHYSICAL AND CHEMICAL PROPERTIES OF GREENWAY® NEO SOLAR

Appearance; ..... Green liquid

pH; (AFNOR NF T 90 008 / ASTM D 1287) ..... 8 to 8.4

Alkaline Reserve (AFNOR NF T 78-101 / ASTM D 1121)
(ml HCl N/10 for 20 ml of GREENWAY® NEO SOLAR) ..... ≥ 4 ml

2. PHYSICAL AND CHEMICAL PROPERTIES OF AQUEOUS SOLUTIONS OF GREENWAY® NEO SOLAR

2.1. Freezing point of aqueous solutions of GREENWAY® NEO SOLAR (in °C)

The freezing point of an aqueous solution of GREENWAY® NEO SOLAR shown below is for the formation of a crystalline mix and not a compact mass.

	GREENWAY® NEO SOLAR -25	GREENWAY® NEO SOLAR -30
Freezing point in °C ± 2	- 25	- 30

Relevant standards: AFNOR NF T 78-102 / ASTM D 1177

Freezing points are however, subject to variation due to super-cooling phenomena which may occur. When used as a transfer fluid and particularly at temperatures below 0°C, it is essential that the viscosity is taken into consideration for calculating the pressure loss.

2.2. Boiling point of an aqueous solution of GREENWAY® NEO SOLAR (in °C)

	GREENWAY® NEO SOLAR -25	GREENWAY® NEO SOLAR -30
Boiling point in °C ± 2	104	105

Relevant standards: AFNOR NF R 15-602-4 / ASTM D 1120

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

2.3. Physiochemical properties of GREENWAY® NEO SOLAR - 25 (in kg/m³)

Temperature (°C)	Density (kg/m³)	Kinematic Viscosity (cSt)	Specific Heat (kJ.kg-1.K-1)	Thermal Conductivity (W.m-1.K-1)
- 20	1058	29.5	3.26	0.359
- 10	1052	19.1	3.34	0.369
0	1047	11.6	3.42	0.377
+ 10	1042	6.6	3.50	0.385
+ 20	1037	4.3	3.58	0.392
+ 30	1032	2.7	3.66	0.397
+ 40	1029	2.1	3.74	0.402
+ 50	1026	1.6	3.82	0.406
+ 60	1023	1.5	3.90	0.409
+ 70	1020	1.1	3.98	0.412
+ 80	1017	0.90	4.06	0.413
+ 90	1013	0.80	4.14	0.413
+ 100	1010	0.70	4.22	0.413
+ 110	1008	0.60	4.31	0.415
+ 120	1006	0.60	4.39	0.416
+ 130	1003	0.50	4.47	0.417
+ 140	1001	0.50	4.55	0.417
+ 150	998	0.50	4.63	0.415
+ 160	995	0.50	4.71	0.413
+ 170	991	0.50	4.79	0.410
+ 180	987	0.50	4.88	0.407
+ 190	983	0.30	4.96	0.402
+ 200	978	0.30	5.04	0.396

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

2.4. Physiochemical properties of GREENWAY® NEO SOLAR -30

Temperature (°C)	Density (kg/m^3)	Kinematic Viscosity (cSt)	Specific Heat (kJ.kg^{-1}.K^{-1})	Thermal Conductivity (W.m-1.K-1)
- 20	1062	33.3	3.08	0.347
- 10	1056	21.7	3.17	0.356
0	1051	13.9	3.25	0.364
+ 10	1046	8.5	3.34	0.371
+ 20	1041	5.3	3.43	0.377
+ 30	1036	3.4	3.51	0.382
+ 40	1031	2.6	3.60	0.386
+ 50	1030	2.2	3.68	0.390
+ 60	1027	1.7	3.77	0.393
+ 70	1024	1.4	3.85	0.395
+ 80	1021	1.2	3.94	0.396
+ 90	1017	1.0	4.06	0.396
+ 100	1014	0.90	4.11	0.397
+ 110	1012	0.80	4.20	0.397
+ 120	1010	0.70	4.29	0.398
+ 130	1007	0.70	4.37	0.399
+ 140	1005	0.60	4.46	0.399
+ 150	1002	0.60	4.54	0.398
+ 160	999	0.60	4.63	0.396
+ 170	995	0.50	4.71	0.393
+ 180	991	0.50	4.80	0.389
+ 190	987	0.40	4.89	0.385
+ 200	982	0.40	4.97	0.379

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

3. PROTECTION OF METALS BY GREENWAY® NEO SOLAR

As a comparison, the table below shows the corrosion of several metals in tap water and **GREENWAY® NEO SOLAR** 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

4. PRESSURE LOSS

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

3. RECOMMENDATIONS FOR THE IMPLEMENTATION OF GREENWAY® NEO SOLAR

It is strongly recommended to conduct thorough cleaning of an installation using Dispersant D* before filling with the **GREENWAY® NEO SOLAR** solution if it contains large deposits of metal oxides.

The procedure for use is as follows:

- Quickly drain the installation at the lowest point after letting the water circulate for one to two hours.
- Prepare and add a 20g/litre solution of DISPERSANT D* to the system.
- 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.

GREENWAY® NEO SOLAR must not be used with galvanized steel.

An annual check of the **GREENWAY® NEO SOLAR** with APC* analysis is recommended.

** Marketed by **Climalife**.*

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