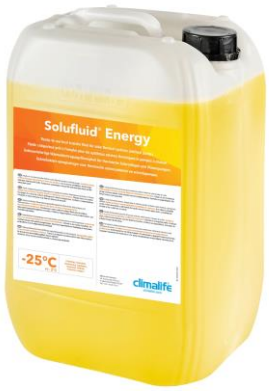
Heat transfer Fluids

SOLUFLUID® ENERGY



Non-contractual photo.

SOLUFLUID® ENERGY is a ready to use heat transfer fluid based on **MONOPROPYLENE GLYCOL** and corrosion inhibitors. It is suitable for domestic hot water production circuits with flat-plate or evacuated tubular solar thermal collectors and for geothermal heat pump systems (buried collector circuits) as well as aerothermal systems.

SOLUFLUID® ENERGY tested at high temperatures can withstand periods of stagnation above +150°C, particularly during the summer.

In accordance with the French Order of 14 January 2019 on the conditions for placing products on the market in installations used for the heat treatment of water intended for human consumption (EDCH), this formula contains an organoleptic bittering compound.

SOLUFLUID® ENERGY is formulated without Borax, an additive classified as toxic according to the 30th European ATP (Adaptation to Technical Progress).

The anti-corrosion technology used in **SOLUFLUID® ENERGY** is organic, based on neutralised carboxylic acids, without phosphates, nitrites or amines. These anti-corrosion agents provide long-lasting anti-corrosive protection.

SOLUFLUID® ENERGY provides effective protection against freezing and corrosion of the metals in the various circuits (steel, aluminium, copper, brass, solder, etc.). It prevents the formation of sludge in the circuits and the clogging of solar collectors and underground circuits.

Its yellow colour makes it easy to identify.

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1. PHYSICO-CHEMICAL PROPERTIES OF SOLUFLUID® ENERGY

Appearance..... Yellow liquid

Density at 20°C (AFNOR NF R 15-602-1 / ASTM D 1122)
Solufluid ENERGY -25..... 1,040 * 0,002 kg/dm3
Solufluid ENERGY -20..... 1.036 * 0.002 kg/dm3

Boiling temperature °C (AFNOR NF R 15-602-4 / ASTM D 1120) at atmospheric pressure
Solufluid ENERGY -25 / -20..... 105 * 2°C

pH (AFNOR NF T 90-008 / ASTM D 1287)
Solufluid ENERGY -25 / -20..... 8,1 à 8,5

Alkaline reserve on 20 ml of product (AFNOR NF T 78-101 / ASTM D 1121)
Solufluid ENERGY -25 / -20..... ≥ 7 ml

Freezing point °C (AFNOR NF T 78-102 / ASTM D 1177)
Solufluid ENERGY -25..... - 25 * 2°C
Solufluid ENERGY -20..... - 20 * 2°C
(Formation of a crystalline slurry rather than a compact mass)

1.1. Density of SOLUFLUID® ENERGY as a function of temperature (kg/dm3)

Temperature (in °C)	- 20	- 10	0	+ 10	+ 20	+ 40	+ 60	+ 80	+ 100
Solufluid ENERGY -25	1.055	1.053	1.049	1.045	1.040	1.027	1.013	0.998	0.981
Solufluid ENERGY -20	1.050	1.049	1.045	1.041	1.036	1.024	1.010	0.995	0.979

1.2. Kinematic viscosity of SOLUFLUID® ENERGY as a function of temperature (in centistokes)

Temperature (in °C)	- 20	- 10	0	+ 10	+ 20	+ 40	+ 60	+ 80	+ 100
Solufluid ENERGY -25	57.0	27.8	15.0	8.8	5.6	2.7	1.6	1.0	0.8
Solufluid ENERGY -20	41.5	21.1	11.8	7.2	4.7	2.3	1.4	0.9	0.7

1.3. Specific heat of SOLUFLUID® ENERGY as a function of temperature (in kJ. kg-1.K-1)

Temperature (in °C)	- 20	- 10	0	+ 10	+ 20	+ 40	+ 60	+ 80	+ 100
Solufluid ENERGY -25	3.53	3.56	3.59	3.62	3.65	3.71	3.78	3.84	3.90
Solufluid ENERGY -20	3.64	3.66	3.69	3.71	3.74	3.79	3.85	3.90	3.96

Thermal conductivity of SOLUFLUID® ENERGY as a function of temperature (in W.m-1.K-1)*.

Temperature (in °C)	- 20	- 10	0	+ 10	+ 20	+ 40	+ 60	+ 80	+ 100
Solufluid ENERGY -25	0.404	0.404	0.404	0.404	0.403	0.402	0.401	0.403	0.407
Solufluid ENERGY -20	0.417	0.419	0.420	0.423	0.424	0.425	0.427	0.431	0.438

1.4. Vapour pressure of SOLUFLUID® ENERGY as a function of temperature (in bar)

Temperature in °C	50	70	90	110	120	130	140	150	160	170	180	190	200
Solufluid ENERGY -25	0.1	0.2	0.5	1.1	1.6	2.2	3.0	4.0	5.2	6.8	8.7	11.0	13.8
Solufluid ENERGY -20	0.1	0.2	0.6	1.2	1.6	2.2	3.0	4.0	5.3	6.8	8.7	11.1	13.8

*Bibliographic data provided for information only.

2. ENERGY PROTECTING METALS WITH SOLUFLUID® ENERGY

By way of comparison, the table below shows the respective corrosive effects of mains water and SOLUFLUID® ENERGY on several metals.

Metals (weight loss in mg/plate)	City water	SOLUFLUID® ENERGY
COPPER	3	± 2
WELDING	100	± 4
BRASS	4,5	± 2
STEEL	700	± 1
CAST IRON	775	± 2
ALUMINIUM	120	± 8

Normative references test method: AFNOR NF R 15-602-7 / ASTM D 1384

The above values are obtained by carrying out the test with the basic concentrated antifreeze.

3. PRESSURE LOSSES

When using SOLUFLUID® ENERGY in an installation, the viscosity of the solution must be taken into account when calculating head losses.

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4. RECOMMENDATIONS FOR USING SOLUFLUID® ENERGY

It is strongly recommended that installations containing heavy deposits, particularly metal oxides, be thoroughly cleaned before filling with the SOLUFLUID® ENERGY mixture, using Dispersant D*.
Glycol solutions have a high wetting power and can loosen pre-existing deposits (e.g. rust bloom), which will generate sludge.

The procedure is as follows:

- Drain the system quickly at the lowest point, after allowing the water to circulate for one or two hours.
- Prepare a 20 g/litre solution of DISPERSANT D* in water.
- Add the resulting solution to the system.
- Allow the product to circulate for at least 2 hours. Rinse thoroughly with ordinary water.

Depending on the condition of the circuit, a second cleaning may be necessary. It is important to drain and rinse thoroughly with water.

In the event of replacement of a heat transfer solution or a polluted installation, consult Climalife for appropriate cleaning information.

Galvanised steel must not be used with the SOLUFLUID® ENERGY.

** Marketed by Climalife..*

**** The information given in this document is for guidance only and does not constitute a sales specification.***