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Climalife Contact

The European magazine for heat plant professionals

Heat transfer fluids Think differently!



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**From formulation
to production:**
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whole chain

Editorial



Laurent Assoun
BU Manager Residential & Tertiary

Treatment of used heat transfer fluids: clarification of an uncertain situation

In Europe, there is still a certain confusion as to the treatment of spent heat transfer fluids (FCU). Each country advocates its own reprocessing processes.

Heat transfer fluids: let's take the right path!

The heat transfer fluid commonly called glycol, used in heating and cooling systems, has long been regarded by environmental engineering professionals as a commodity product. Low-end heat transfer fluids have been extensively used, which has generated technical problems in various facilities. These problems have damaged the image of heat transfer fluids with the various market players, some of whom have taken the radical decision to no longer use it in their systems.

But nowadays, the development of chilled water air conditioning and thermal solar heating networks means we can no longer simply ignore this type of product or use low-end solutions.

We need therefore to implement a series of actions to boost the credibility of this product family.

First, we must remind users of the main benefits of heat transfer fluids, namely the frost protection of central heating and solar heating networks and the efficient transfer of cold production in the case of chilled water air conditioning systems. We should also emphasise the fact that high quality heat transfer fluids contain corrosion inhibitors and therefore limit corrosion in water systems.

Manufacturers of these products must fully commit themselves to quality and innovation. This is what we have been doing at Climalife for many years, enabling us today to launch Greenway – the plant-based heat transfer fluid.

In short, it is the concerted action by all market stakeholders, based on dialogue and responsibility, that will ensure our ability to develop the use of efficient and environmentally friendly coolants. Together, let's take the right path!

Happy reading!

By looking at a number of bad habits and misunderstandings about the regulations, Climalife clarifies the situation, using the example of the method to be used in France according to current regulations: Art. R543-3 to 16 of the Environmental Code and the Order of 28 January 1999.

In practice, we see far too many discharges of used heat transfer fluids into the wild, in defiance of regulations and to the detriment of the environment.

It is important to recall the following basic facts:

- The discharge of glycolated water into wastewater systems (e.g. sewers) is prohibited.
- Glycols are highly toxic to the bacterial colonies used in sewage plants.
- Heat transfer fluids must be recovered by a specialised company.
- It is destroyed in specialist centres or at certain landfills.

The root of the problem:

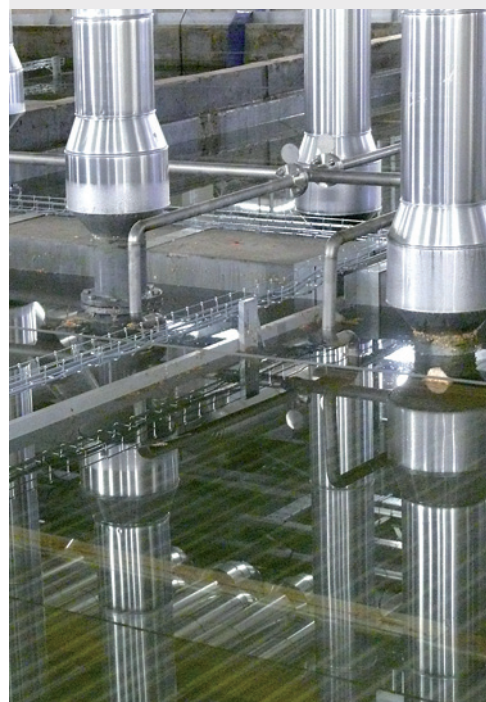
As it ages, heat transfer fluid becomes increasingly acidic, by hydrolysis and molecular cracking. Whatever the situation, once they have been drained, heat transfer fluids are classified as HIW (Hazardous Industrial Waste).

It is then the responsibility of the company, as a producer of waste, to ensure its traceability by issuing a WTF (Waste Tracking Form) – French waste code 13 03 10 for waste oils and heat transfer fluids - filling it out and making it available to the waste collector-carrier or destroyer.

It is time to change bad habits and to understand once and for all that this chemical is a consumable. It is essential that responsibility is taken for the disposal of heat transfer fluids and we listen to the suggestions made by professionals on replacing them.

MSDS

Referring to the MSDS (Material Safety Data Sheet) for a given product is not an option: it is a legal obligation for all operators.



Climalife services:

Climalife provides professionals with a turnkey service to help perform specific operations on refrigeration, heating and air conditioning facilities, such as the recovery and treatment of heat transfer fluids and contaminated packaging, in accordance with regulations.

Contact your Climalife sales representative for more information.

Note: these services are currently available in France, Belgium, Netherlands, Germany and Hungary.

Fitters' questions / expert answers everything you need to know about secondary refrigerants / heat transfer fluids

Interview with Patrick Lê, Manager of Heat Transfer Fluid Technical Support for Group Dehon.



answer the most frequent queries*.

Q: I want to buy the antifreeze as a concentrate and dilute it myself.

P.L.: We recommend using treated water (de-mineralised) in order to limit the introduction of compounds (chlorides, sulphates, carbonates,...) that can jeopardise corrosion resistance.

All the standardised corrosion tests are carried out with concentrations of 33% by volume of antifreeze. Below this concentration, the amount of corrosion inhibitor in the circuit is too low and may not provide adequate protection against corrosion.

That is why we recommend, not just because of the protection provided against freezing, using a minimum concentration of 33% by volume of antifreeze. This concentration, depending on the antifreeze, gives a freezing point of -12 to -18°C.

Q: I diluted the anti-freeze myself and the freezing point is measured as -17°C when it should be -20°C.

P.L.: You probably calculated the amount of antifreeze you required using the theoretical volume of your installation as the basis. Our experience shows that in large volume systems, from 5 or 6 m3 upwards, the theoretical

calculation of the volume of the installation is always about 10% less than the real volume.

Q: Glycolated water, whether prepared by me or delivered ready to use, used to protect down to -22°C a year ago, but is now only -18°C.

P.L.: The glycols used in the manufacture of antifreeze do not disappear over time. The only possible chemical explanation is that water has been added to the circuit.

Q: My cooling installation is malfunctioning, after a few hours the yield drops.

P.L.: Two possible explanations:

- the freezing temperature of the glycolated water is too close to the evaporation temperature. As it approaches its freezing point, glycolated water undergoes a very significant increase in viscosity and «layers» of glycolated water stop flowing. The heat exchange drops and the glycolated water slowly freezes in the heat exchanger. The freezing point of glycolated water must be at least five degrees lower than the lowest temperature likely to be reached in the exchanger.

- the circuit contains a lot of sludge. This sludge will settle in the areas where there are the greatest losses of load and the coldest areas, so generally in the exchanger. The only alternatives are either to drain and clean out the system or to mount a bypass filter to remove the sludge. »

Q: I want to clean my system with water before putting antifreeze in.

P.L.: If you put water into your system which is mainly steel, when you drain the system it

will corrode on the surface. The glycolated water will then remove this thin layer of rust and sludge will form. The quantity of sludge will be directly proportional to the size of the system. When cleaning with water, it is important that the time between draining the water and filling back up with glycolated water is as short as possible. If you need to leave the system with water in it for several days or leave it in the open air cleaning, ensure you mount a by-pass filter to remove the oxides that the glycolated water will inevitably remove.

Q: I want to add treatment chemicals into my facility.

P.L.: The antifreeze you use has undergone a series of development studies designed by the manufacturer. Its corrosion inhibitors have been assessed and validated in the course of a number of corrosion tests. There is therefore no need to add other products. Furthermore, the addition of other products could destabilise the formulation of the glycolated water and reduce the effectiveness of the corrosion inhibitors in the antifreeze.

Q: I would like to know the lifespan of the glycolated water in my installation.

P.L.: Unfortunately, it is impossible to give a specific duration. This is because the corrosion inhibitors will be «consumed» at varying speeds over time according to operational constraints, the kinds of materials, the extent of galvanic coupling and so on. Only an analysis of the glycolated water can determine whether you need to renew it.

*The information in this article is the fruit of the studies we have conducted and of our experience. It is given in good faith but cannot in any way constitute a guarantee from us, or mean that we accept liability, especially in the case of infringement of third parties or of failure by users of our products to abide with the relevant current regulations.



Q: I put blue antifreeze in my system and the liquid is now a yellowish colour.

P.L.: The dyes used in antifreeze are organic molecules. The coloration can change under the influence of the temperature or the metal oxides present in the circuit... This colour change does not necessarily mean that the product is no longer effective.

Q: I want to add antifreeze X to my system, which already contains an antifreeze, the source of which I cannot remember.

P.L.: Antifreezes are usually miscible, meaning that if you mix them you get a homogeneous solution, unless they are heat transfer fluids using different glycols (MEG, MPG,...). However, this does not mean that the antifreezes are compatible. Two different antifreezes will have different formulations in terms of corrosion inhibitors.

Mixing them together will result in a blend of corrosion inhibitors, the effectiveness of which cannot be determined. Before adding anything, we recommend that you check the glycolated water present in the circuit to assess

whether it might not be better to undertake a complete renewal.

Q: I want to use pure glycol because it is cheaper than antifreeze.

P.L.: A word of caution: pure glycol contains no corrosion inhibitors. Using this kind of product in aqueous solution may cause severe corrosion to your circuits.

Even if the pipes are made of stainless steel, if you have a different alloy somewhere in the system (e.g. copper in a heat exchanger), you will have galvanic coupling and we do not know in this case which alloy will act as the shield to the other.

Q: I want to use galvanised steel for my pipes.

P.L.: Be warned that while the zinc in galvanised steel protects the steel from corrosion in a wet atmosphere, zinc is incompatible with glycols. Galvanised steel will be «stripped» by the glycolated water and a very sticky sludge (zinc salts) will settle, often clogging the filters on the facility.

Q: And what are the implications for solar thermal systems?

P.L.: For solar thermal applications, the heat transfer fluid can be subjected to high temperatures (over 150°C). At these temperatures, the molecules of glycol can degrade, usually leading to a drop in the corrosion protection though acidification of the liquid. Regular monitoring of the heat transfer fluid, if only by the simple measurement of pH, is highly recommended. We stress also that pH-indicator strips are not suitable for these measurements. It is recommended to use a pH meter. Intervals of 1 year for checking pH are appropriate.

To reduce the risk of degradation, you can also think about using other heat transfer fluids which no longer contain glycol but a raw material with similar molecules, with improved thermal stability. The ultimate risk, if the liquid no longer circulates and stagnates in the sensors, is the «tarring» of the product. If this happens, there are specific products to clean and safeguard the sensors.

Thank you, Mr. Lê!



Continued growth for renewables in the UK

The UK is committed to ambitious targets for the reduction of its carbon emissions in the near future: a decrease of 34% by 2020 of carbon emissions, following on from what has been implemented since 1990 and achieve an 80% reduction by 2050.

On the one hand, many companies are keen to reach these goals in the next ten years and are thus very careful about their carbon footprint. Households are also being encouraged to reduce their energy consumption. On the other hand, the Ministry of Energy and Climate Change has set up various programmes such as the Renewable Heat Incentive and «The Green Deal» in order to encourage a reduction in the impact on the environment.

All these efforts are paving the way for an increased use of heat pump technologies and solar thermal applications that use the heat transfer fluid. Using an Organic fluid like Greenway, which is made from plant sources, rather than a petrochemical product, is a logical step forward in accompanying industries and businesses in their efforts to reduce their energy costs and carbon footprint.

Climalife is today able to provide the Greenway range across Europe. In the UK, an increase in the use of products like these is already scheduled for 2012.

COMMERCE

The largest natural ski-jump in Germany is cooled using Thermera R

The Hochfirst ski-jump in the Black Forest is one of the largest national and international competition ski jumping sites in the world. The conditions for safe and exciting ski jumping have been optimised using an original cooling system.



To enable the ski jumping stronghold of Titisee-Neustadt to remain competitive with other sites and improve jumping conditions, the Hochfirsts-chance is fitting a new cooling system for the ramp.

The challenge is to adapt a condensing unit, which was previously used in a supermarket warehouse, to a number of very specific requirements.

To transform the system at the most effective cost possible, it was important as far as pos-

sible to maintain all of the existing production and control equipment and make sure it could provide good quality ice on the track to meet the requirements of this top-level sport.

It was with these needs in mind that Joachim Häfker, the general secretary of the Neustadt Ski Club, turned to the company Heinz Moritz GmbH in Gundelfingen, which has designed and built cooling technology facilities for 49 years. The project was conducted in partnership with other businesses from the area, as well as volunteers from the ski jumping team. It was also very important for the Neustadt Ski Club that the heat transfer fluid used in the cooling system was environmentally friendly.

An individual refrigerated mat was designed and fitted to the ramp, made up of a single cooling pipe some two and a half kilometres long, with 6,000 cable clips arranged on 18 rows and fixed on a metal grid. The power supply for the chiller is composed of three two-stage Bitzer S6J-16.2 compressors. The pump used is an ETALINE (20,000 m³/h) with an output of 6000 Watts and a discharge head of 40 metres. The total volume of the facility is 1,200 litres.

The quality of ice is the central issue. The ice on the ramp must be neither too hard nor too soft. Furthermore, all warming and the appearance of cracks must be prevented. As a result, it is crucial to take into account prevailing weather conditions. Because of these stringent demands in terms of temperature and physical characteristics, the natural choices were the Thermera R heat transfer fluid and the R-404A refrigerant. Thermera R is cooled to between -15 and -2°C by a plate heat exchanger.

In order to regulate and control the frequent changes in refrigeration needs caused by

the very changeable conditions, an E CAREL E3V45ASR00 electronic expansion valve is used with a CAREL pCO2/IR automatic control system.

The managers of the ski jump have been delighted by Climalife's environmentally friendly betaine-based Thermera R heat transfer fluid, both with regard to its physical characteristics and its ecological properties. This sugar beet by-product produces the desired temperature in the refrigerant without any environmental risks and provides protection down to -35°C. The facility is automatically controlled and optimised using the Testo sensors which monitor the temperatures in the various zones of the system.

For the Neustadt Ski Club, this new indirect cooling system for the ramp is an original, economic and ideal environmentally friendly solution to improve competition level ski jumping conditions.



From left to right:

- Joachim Häfker (Secretary General)
- Ernst Simon (Stadium Manager)
- Niklas Moritz (Heinz Moritz GmbH)
- Mathias Schlegel (Site manager)
- Thomas Moritz (Heinz Moritz GmbH)

Company: Heinz Moritz GmbH

Activity: Planning, delivery and construction of cooling systems

Location : Gundelfingen - Germany

Date of creation: 1964

Employees: 14

TERTIARY

Greenway® Solar and De Dietrich heat a sports complex using solar power!

Saint-Antonin le Val, 20 September 2011

The town council in the charming locality of Saint-Antonin in southern France have decided to combine tradition and modernity in order to provide their citizens with a quality public service which looks to the future. The town has a wonderful sports complex made up of an open-air swimming pool and a gymnasium, playing host both to school children and local residents. When the time came to invest in a new heating system in order to replace the old boilers, it was an opportunity to make the most of the valley's glorious sunshine.

The study into the heating and hot water needs undertaken by Olivier Delhomme from BE CD2I, helped to size the system so that to ensure that coverage was optimal, i.e. heating for the comfort of visitors and users and domestic hot water (DHW) for the showers in both buildings and for heating the swimming pool during the summer.

Since May 2011, De Dietrich has turned to Greenway® Solar for all its collective solar facilities because of its capacity to hold the high temperatures obtained during the summer periods and to prevent the accelerated degradation that occurs when a monopropylene glycol fluid is used.

Greenway® Solar expands and deteriorates 4 times less at 150° C, allowing De Dietrich to set up facilities with lower maintenance costs and which are much more resistant to the high stresses they undergo.

A guarantee of quality and performance for its customers and a pledge of confidence for Climalife!

Company: Bourrié - Groupement Climater
Activity: Engineering - Air conditioning - Construction - Plumbing
Location: Caussade - Tarn-et-Garonne (82) - France
Date of creation: 1946
Employees: 25
<http://www.groupe-climater.com>

The company Bourrié, a climate control engineering firm which is a member of the Climater Group (with 450 employees mainly in Tarn et Garonne), was asked by the mayor of Saint-Antonin to carry out the renovation work on the facility.

The project proposed by Bourrié and accepted by the town council is as follows: a dual network managed by an automatic control system which, depending on needs and the frequency of use of one or other of the buildings, makes it possible to provide the necessary heat.

The hot water is obtained mainly using the solar heat network, which is piloted by the system's regulation device.

Description of the heating system:

- 350 kW wood pellet boiler,
- 65 m² of flat solar panels with 24 Dietrisol Pro C 250 Regulation DeltaSol E sensors,



- semi-instantaneous FWS 750 DHW cylinder and 1 750 L buffer tank,
- 2 4000 L storage tanks (see photo),
- 150 L of Greenway® Solar.

The partner of Bourrié for solar thermal power, De Dietrich Thermique* and Tereva Montauban, provided the whole solar thermal system.

To ensure the sustainability of the system, to protect against overheating and for environmental reasons, the virtues of Greenway® Solar were chosen as the heat transfer fluid i.e. the «blood» of the solar power set-up. Because it has low expansion rates at high temperatures, it made it possible to size the expansion vessel accurately, thus reducing the overall cost of the installation.

Alexandre Priquet (Bourrié): «The fluid is very stable, and we have not seen any failure to increase pressure in the network. In addition to its technical characteristics, the fact that it is plant-based is also a plus for the whole system.»

*internationally reputed manufacturer of heating equipment, a member of the BDR Therma Group, Europe's third largest group for the supply of heating systems.

TERTIARY

CIAT chooses Greenway® for its new systems demonstrator in the CRISTOPIA building

The CIAT Group, through its subsidiary CRISTOPIA Energy Systems, has designed and implemented an HYSYS and Pôle Energie systems demonstrator with CRISTOPIA STL thermal energy storage in its recently renovated buildings in Vence in the South of France.

This «showroom» demonstrates a standard operational facility for customers, integrators, engineering consultants and anyone else who has cooling needs in excess of 500 kW, mainly for facilities in the service sector. The full Pôle Energie is driven by a Cristo'Control2, and the Comfort Units and the dual flow handling units are monitored by an Easy CIAT-Control.

HYSYS is a modular system, a combination of optimised products, the aim of which is to guarantee the quality of indoor air, personal comfort and energy optimisation in buildings. Pôle Energie is a system which brings together advanced technologies in low consumption production and storage, to make it possible to produce hot and cold water at a lower cost and to minimise environmental impacts.

The facility has been operational since June 2011, with an Aquaciat heat pump (Cold power 61 kW, Hot power 50 kW, absorbed power 21 kW) with CRISTOPIA cold storage, Cristo'Control2 smart control and piloting system, a Floway double flow air processing unit, CIAT comfort units and an Expair precision air-conditioning module for the computer room.

The principle of cold storage is to store cooling energy when the needs of the building are low, mostly at night. By producing cold air over 24 hours, the costs of energy consumption can be reduced and the equipment designed more accurately.

The heat transfer fluid used is Greenway,



a «green» fluid mainly composed of 1.3 Propanediol produced from 100% renewable plant-based resources. CIAT has chosen Greenway for its energy and carbon footprint which is two times lower than that of MEG / MPG products (mono ethylene or mono propylene glycol), which are derived from petroleum resources and which will only

continue to increase in cost.

Cristo'Control2, the real brains behind the Pôle Energie, manages all the parameters to optimise the overall energy efficiency of the Energy Hub throughout the year. The system can be monitored locally or remotely.





Coolant / refrigerant expertise

From formulation to production:

Climalife, mastery across the chain is global.

Back in 1979, the Dehon Group began the production of automotive antifreeze, after acquiring the formulation patents from the company Ugine-Kuhlmann.

Our R&D laboratory rapidly developed new formulations for refrigeration and heating applications, with a full range of monoethylene glycol (MEG) and monopropylene glycol (MPG) solutions.

Because regulatory and environmental constraints are always changing, we are constantly evolving in terms of formulation and manufacturing processes.

A 5-step process:

1/ Formulation

2/ Conformance testing (performance)

Once it has been finalised, the formula is tested to ensure it meets various criteria:

- Clarity: it must remain clear, with no deposits.
- Cold resistance: its freezing point must comply with the request.
- PH, density, alkali reserve.
- Standardised AFNOR / ASTM tests.

3/ Manufacture:

In accordance with the method and technical specifications provided by the laboratory, the manufacturing process is launched.

4/ Quality control

After manufacture, a sample is systematically taken (photo 4) for laboratory analysis to ensure compliance with specifications:

- appearance after 24 h,
- alkali reserve and pH by assay (photo 5),
- freezing point by refractometry,
- mass density.

Each sample is stored for 1 month for traceability reasons and up to 6 months for the manufacture of bulk products. If the product is compliant, it can then be «released» to a buffer tank (photo 6) where the dye is introduced and then the packaging operation can take place. In case of non-compliance, the product is blocked. The Quality department and the laboratory are asked to analyse the source of the error.

All our formulas are ASTM and AFNOR compliant

To meet the needs of international markets in terms of heat transfer fluids / secondary refrigerants, our Climalife research and development laboratories evaluate the performance of our formulas with respect to ASTM* and AFNOR** standards.

Before they go on to the market, our formulas are systematically tested against these standards. But what exactly are they?

Choosing the right heat transfer fluid / secondary refrigerant means having a high quality product which is compatible with the various different materials used in thermal systems. It is essential to undertake corrosion tests and compatibility tests on the elastomers.

1/ Corrosion tests on all the materials commonly found in thermal facilities (copper, solder, steel, brass, aluminium, cast iron...) are carried out using two methodologies: glass tests and hot plate tests.

- Glass tests:

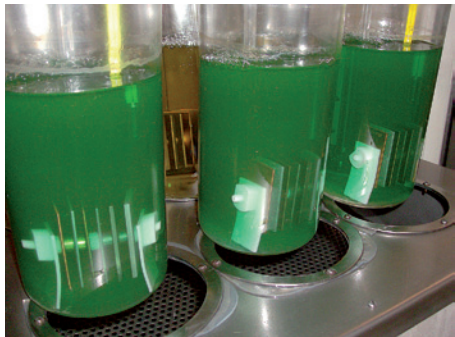
The metal samples are completely immersed in a solution of heat transfer fluid / secondary refrigerant for 336h at 88°C (ASTM).

The corrosion properties are evaluated by

comparing the weight before and after the test. Each test is repeated 3 times for each metal.

The results of these glass tests are given in our technical data sheets.

- Hot plates:



The control plates of each material are soaked in the heat transfer fluid / refrigerant solution and tested at higher temperatures, from 130°C to 150°C, and over a period of 168h.

They are weighed at the start and, at the end of the test, must not show more than one milligram of corrosion (i.e. mass lost) for the solution to be approved.

2/ Compatibility of elastomers*** :

All the usual elastomers such as butyl rubber, nitrile rubber or polypropylene are analysed by soaking at a given temperature.

Before and after the test, the differences in vo-



lume change of the elastomers and their resistance to deformation are measured.

* ASTM (D 1384) International Standard and NF R 15-602-7 French Standard.
** ASTM D 4340 and NF T 15-602-8 French standard
*** AFNOR NFT iso 1817 elastomer compatibilities



For example, borax, a corrosion inhibitor which was recently added to the Candidate List of Substances of Very High Concern by the European Chemicals Agency, has completely disappeared from our formulas in order to anticipate future regulations which will almost certainly subject it to prior authorisation. This change has been transformed into an opportunity to develop our inhibitors using totally organic substances which are more efficient and sustainable.

The formula, which is entered into the automatic production controller database (photo 3), is then implemented, respecting the quantities of each of its constituents (e.g.: MEG, demineralised water, inhibitor pack) in a tank with a mixer (photo 2).

The dye is only introduced when the quality control phase has been completed. Our production facilities guarantee high quality products and optimum safety.

They can provide the necessary recommendations for adjusting and finalising the mixture

5/ Packaging - Logistics

Packaging is done according to the type of product and the requirements of the customer. From 20 L cans up to bulk quantities of more than 20 tonnes, the possibilities are endless. Our logistics organisation ensures the deliveries arrive on time and used products can be recovered.



«Heat transfer fluid / secondary refrigerant factory performances»

- 3 approved manufacturing sites: St Priest (Rhône-Alpes, France), Passy (Haute Savoie, France) and St Niklaas (Belgium).
- Total production capacity: 60,000 tonnes.
- Storage capacity: 2,500 tonnes.
- Standard: ISO 9001.
- Distribution network: Europe et international.

Example of glass tests done for Friogel® Neo:			
Metals	Loss of mass (mg / test tube)	Thresholds of standard NF R 15-601	Thresholds of standard ASTM D 3306
Copper	± 2	[-5 ; +5]	[-10 ; +10]
Solder	± 4	[-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	± 8	[-10 ; +20]	[-30 ; +30]

Standard references for test methods: AFNOR NF R 15-602-7 / ASTM D 1384



Discover our solar thermal offers: SolRnett + Greenway® Solar

To combat the main problem faced by solar thermal systems, that of overheating, Climalife offers two new curative and preventive solutions!
Have you ever encountered a system where the flow is reduced or even worse blocked by deposits of (MPG based) heat transfer fluid which has degraded? Climalife believes:

- **The replacement of sensors is not an option to avoid the additional costs of investment.**
- **The risks of overheating can be avoided if you choose the correct heat transfer fluid.**

Cure with SolRnett:

It is for this reason that our R&D has developed SolRnett, the new cleaner specially designed to restore circulation and give the system a new lease of life!



- **Effective even at room temperature.**
- **Non-foaming, easy to rinse.**
- **Compatible with the system materials.**
- **Easy to implement with a circulation pump.**

Prevent with Greenway® Solar:

As the leading European distributor of propanediol heat transfer fluids from 100% plant resources, Climalife offers its Greenway® Solar solution, which is unique on the market for providing decisive technical advantages over traditional monopropylene glycol:

- **4 times less degradation at 150°C.**
- **3 times less expansion at 100°C.**
- **Highly stable technical characteristics.**

With Greenway® Solar, the risks of overheating are minimised and lifespan increased – benefits you can recommend to your customers!

Request your own copy of our Greenway brochure today by contacting your Regional Sales Manager or emailing: info@climalife.co.uk



Friogel Neo :

one of the most extensively used heat transfer fluids used in food industry

While the advantages of an indirect system are well-known (reduction in the charge of the refrigerant and the risk of leaks, simplification of maintenance, etc), there is still the problem of finding the right secondary refrigerant for your system. Friogel Neo meets the expectations of industry and particularly food applications, due to its mono-propylene glycol formulation, approved by the French Directorate General of Health.

Friogel Neo has been used for many years by our clients throughout Europe, and is one of the leading products in our range of secondary refrigerants/heat transfer fluids.

The organic corrosion inhibitors contained in Friogel Neo provide excellent protection against the corrosion of metals in the system, as well as anti-tartar, anti-rust and anti-oxidant properties.

The **organic inhibitors** fix themselves to those parts of the wall most concerned by corrosion, by creating a thin molecular film, resulting in **the optimisation of heat transfer compared to formulations which contain traditional inhibitors**. The inhibitor does not react chemically and does not degrade over time.

Friogel Neo is available in different dilutions and different packaging options.

Choose Friogel Neo for:

- ➔ Excellent protection against freezing.
- ➔ Compatibility with the area of application (food).
- ➔ A formula that is stable over time.



Dates for your diary!

England



Climalife will be participating in the new industrial refrigeration and air conditioning trade fair to be held in Birmingham from **13 to 15 March 2012** - **Stand No. F43 Hall 19.**

Italy

La Mostra Convegno



Climalife will be attending this international event dedicated to professionals in the heating, air conditioning and refrigeration sectors. From **27 to 30 March 2012** at Fiera Milano – **Stand F02 Hall No. 24.**

The Netherlands

Installatie Vakbeurs



Take note now of the dates of the forthcoming «Installatie Vakbeurs», the sanitary fitting and technology fair. This trade fair presents the latest developments and innovations in the sector, in a friendly and relaxed atmosphere.

Installatie Vakbeurs / Klimaatvak Gorinchem - **13, 14 and 15 March 2012.**

Installatie Vakbeurs / Hardenberg - **11, 12 and 13 September 2012.**

Hungary

22nd/23rd March 2012 in Keszthely - a Conference on Renewable Energy. The Climalife Annual Symposium will be held on **28 March 2012**. **The themes:** R&D on refrigerants, choosing the right heat transfer fluid, internal cleaning of refrigeration applications.

For further information:
climalife.hu@dehon.com

Germany

22 March 2012: technical briefing on «preventive measures necessary to avoid the risk of corrosion in hot and cold water systems» in Meerbusch in North Rhine Westphalia.

Registration form available from
004921507073-12 or
infodkf@climalife.dehon.com



The next Chillventa trade fair will take place from **9 to 11 October 2012** in Nuremberg. For the first time, this international refrigeration, air conditioning, ventilation and heating fair begins a day earlier, on the Tuesday, and will last for three days until Thursday.

Chillventa Congressing starts as usual the day before, on Monday, 8 October.

France

For the first time, Climalife will be exhibiting at Innovative Building, the trade show for innovative, efficient, intelligent and sustainable construction to be held from 3 to 5 April 2012 in Paris - Porte de Versailles - Hall 4.



Salon Energies Froid

The upcoming regional Energies Froid fairs dedicated to thermodynamics will be held:

- **Strasbourg: 26 & 27 September 2012**
- **Toulouse: 14 & 15 November 2012**

Pre-register now and get your free badge at:
<http://www.energiesfroid.com>

Switzerland



This symposium for refrigeration professionals will be held in **Yverdon-les-Bains** on **7 November 2012**, organised by the ASF (Swiss Refrigeration Association, French-speaking section). This day in French-speaking Switzerland will allow refrigeration market players from the area to meet, discuss and discover the latest technical developments.

International

Meet the Climalife Galco team at:

- **CLIMATE WORLD / Russie** from **12 to 15 March 2012**.
- **CHINA Refrigeration / Beijing** from **11 to 13 April 2012**.
- **ISK-SODEX / Istanbul - Turkey** from **2 to 5 May 2012**.
- **ARBS / Melbourne – Australia** from **7 to 9 May 2012**.
- **REVAC 2012 / Kuala Lumpur – Malaysia** from **26 to 28 June 2012**.
- **HVAC ASIA / Marina Bay Sand – Singapore** from **5 to 7 September 2012**.
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