

NETTOGAZ GC+



THE INNOVATIVE SOLUTION

FOR THE INTERNAL CLEANING OF REFRIGERATED CIRCUITS

REGULATORY CONTEXT

In the same way as refrigerants, solvents containing fluorinated greenhouse gases are governed by European Regulation No. 517-2014, commonly called F-GAS II. Solvents containing greenhouse gases used to clean refrigerated circuits require personnel to obtain a certification of competence that is different from the aptitude certification required for refrigeration technicians to handle refrigerants. As a result, Climalife was forward-thinking and developed Nettogaz GC+: a cleaning product without fluorinated greenhouse gases to replace Nettogaz GC1.

WHY CHOOSE NETTOGAZ GC+?

- **It is easy to use** thanks to the Climalife formulation and specific nitrogen pressurised cylinder that gives it physical-chemical properties and a use that is perfectly suitable for this application.
- **It is instantly effective:** its cleaning power is linear and its Kauri Butanol index greater than 80 allows us to confirm its high performance in eliminating impurities from circuits.
- **It is completely safe and reliable:** the product is non-flammable, non-toxic and does not contain fluorinated greenhouse gases or dangerous products.



Product may differ from photo

climalife[®]

1 WHEN TO USE NETTOGAZ GC+

The effective operation of a refrigeration system is dependent upon the internal cleanliness of its circuit.

Impurities present in the circuit, whether they be water, solder residues or solid contaminants such as metal oxides, can cause system failures. Many causes of contamination can be encountered, the most common include:

- Compressor «burn out» in hermetic or semi-hermetic units.
- The presence of water in the system.
- Lubricant deterioration.
- Acid formation.
- Build-up of oxides and metal oxides around the soldered and brazed parts performed without evacuating the oxygen contained in the pipes using an inert gas.

Cleaning is required:

- before putting a new installation into service,
- following system failure having led to the contamination of the circuit in an installation in service.

The **Climalife R&D Department** thus developed **NETTOGAZ GC+**, a mixture that does not affect the ozone layer and without fluorinated greenhouse gases. It is designed for the internal cleaning of refrigerated circuits in compliance with current regulations.

NETTOGAZ GC+ is the ideal solution for the internal cleaning of small volume refrigeration and air conditioning systems (for industrial applications see Facilisolv®).

2 GENERAL CHARACTERISTICS OF GC+

| | |
|--|-------------------------|
| Boiling point under 1.013 bar absolute | + 20 °C |
| Liquid density at +20°C | 1.27 kg/dm ³ |
| Vapour pressure absolute at +20°C | 0.11 bar |
| Kauri Butanol Index | > 80 |
| ODP | None |
| Flash point | None |

NETTOGAZ GC+ has an exceptional solvent capacity which makes it particularly efficient for use with all common lubricants.

3 COMPATIBILITY OF GC+ WITH MATERIALS AND ELASTOMERS

| METALS | PLASTICS | ELASTOMERS |
|-----------------|--------------|-------------------|
| Steel | Epoxy resins | Butyl rubber* |
| Copper | Polyethylene | Natural rubber* |
| Aluminium | Polyester | Polysulphide |
| Iron | PTFE | Nylon EPDM |
| Stainless steel | | PE chlorosulphone |
| Bronze | | Buna-S* |
| Zinc | | |

*slight swelling

Compatibility after one hour of exposure at boiling temperature. Butyl rubber is recommended for extended exposure > 1 month.
Exception: swelling of PTFE and silicone rubber.

When water is present in the circuit, a nitrogen flush is required before using GC+.

4 USE OF NETTOGAZ GC+

NETTOGAZ GC+ is supplied in an aluminium cylinder pressurised with anhydrous nitrogen. A 30-litre recovery drum is provided to collect and store the contaminated product after use.

A complete, reusable application set is supplied as a compulsory item with the 1st delivery of **GC+**. It includes:

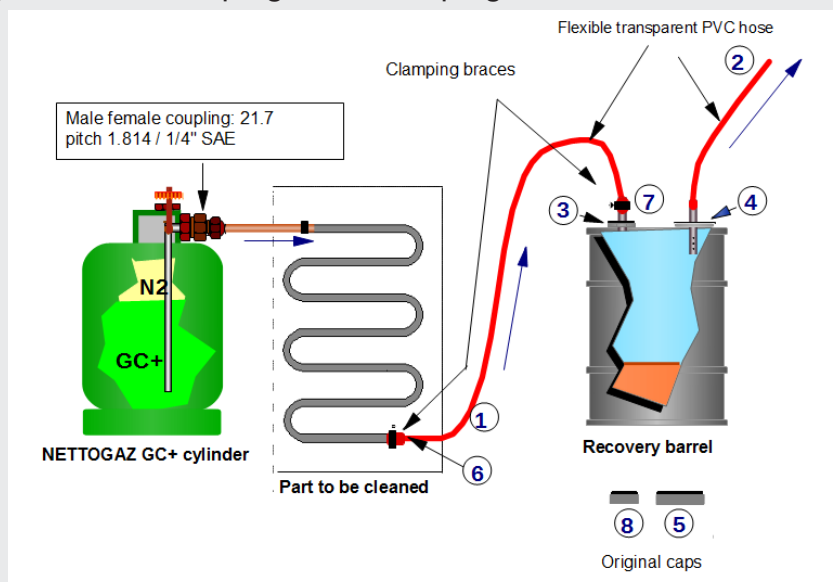
- one special plug with a diameter of $\frac{3}{4}$ " and one with a diameter of 2" equipped with a dip-tube hose to check any overflow of the recovery barrel at the end of the fluid transfer.
- one flexible 25-metre transparent PVC hose with a diameter of 10 x 14 that can be cut at the required length for the connections.
- two clamping braces for the transparent PVC hose with a diameter of 10 x 14.

This compulsory set can be ordered separately.

Industrial applications: contact us.

INSTALLATION CLEANING PROCEDURE

Before starting, check that all plugs and clamping braces are fitted correctly.



- Connect the liquid valve of the cylinder to the component in the circuit to be cleaned.
- Fit the outlet of the component to be cleaned using the transparent PVC hose ① then connect the other extremity to the special plug ③ of the barrel screwed in the place of the original cap ⑧.
- The two extremities of the PVC hose must be tightened using the clamping braces ⑥ and ⑦
- Place and screw the special plug ④ in place of the original cap ⑤.
- Connect the special plug to ④ a piece of transparent PVC hose ② that is long enough to evacuate the nitrogen and any **GC+** vapour into the open air.
- Let the **GC+** circulate in the section to be cleaned.
- Activate the **GC+** circulation by pulsations obtained by quickly alternating opening and shutting the valve of the cylinder so as to create a «water hammer» effect on the fluid.
- The flexible, transparent PVC hose ① allows the flow and appearance of **GC+** to be monitored.
- Stop the circulation when the **GC+** is clear as it flows out of the circuit.
- Disconnect without spilling any product and close the recovery barrel with the original caps.
- Once the cleaning is finished and the **GC+** recovered, proceed with an anhydrous nitrogen flush without exceeding 10 bars of pressure and then vacuum pump making sure that all of the **GC+** has been removed from the circuit.

A RECOVERY BARREL MUST NEVER BE COMPLETELY FILLED.

The level of liquid must never go over the extremity of the dip-tube hose on the special plug ④.

RECOVERY OF THE GC+ IS OBLIGATORY

The company returning the **GC+** must complete a waste tracking document. The waste code for **GC+** is the 140602* category.

It is obligatory to identify recovery barrels with the Recovery label provided that has been properly completed and **returned** to us.

QUANTITY OF GC+ TO USE

To assess the quantity of the product to use, the approximate quantity of **GC+** can be extrapolated from the quantity contained in 1 linear meter of:

- | | |
|--------------------------------|---------------------------------|
| • 1/4' pipeapprox. 40 g | • 3/4' pipe.....approx. 350 g |
| • 3/8' pipe.....approx. 90 g | • 7/8' pipe.....approx. 480 g |
| • 1/2' pipeapprox. 160 g | • 1 1/8 pipe.....approx. 800 g |
| • 5/8' pipe..... approx. 240 g | • 1 3/8 pipe.....approx. 1200 g |

RECOMMENDATIONS AND SAFETY

NETTOGAZ GC+ is non-flammable.

Never clean the inside of a compressor with GC+. The control mechanisms must always be cleaned separately and not during circulation of **GC+** in the circuit. It is recommended to clean every part of the refrigeration circuit separately.

Never pressurise **GC+** with compressed air or oxygen.

The **GC+** fumes being heavier than air, work areas must be ventilated using an exhaust system in the lower part of rooms and the liquid must not be used in underground levels or cellars without taking the necessary precautions.

NETTOGAZ GC+ is regulated in the same manner as refrigerants.

Class 2 - Danger code 20.

Nature: mixture of solvents pressurised with nitrogen.

The information in this article is the result 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.

© 2015 – dehon service – All rights reserved

climalife®

Climalife IDS Refrigeration
Green Court - Kings Weston Lane
Avonmouth - Bristol - BS11 8AZ - UK
Tel.: 00 44 11 79 80 25 20 - Fax: 00 44 11 79 80 25 21
climalife.uk@climalife.dehon.com

www.climalife.dehon.com