

# MATERIAL APPLICATIONS

Guarniflon GCS materials are proprietary compounds developed thanks to in-house blending and testing. Each GCS grade fit customers' requirements and enhance the performance of both Field and Process gas compressors.

GCS grades are proprietary multi filler PTFE compounds successfully tested in critical environments. Guarniflon Engineering Team should be consulted for further advices and technical support about proper applications of GCS materials.

## DRIVING FORCES

- High thermal stability
- High chemical resistance
- Wear resistance
- Equally suited for dry gas and wet gas compressor applications, mostly in non-lube environments

GRADE	MAIN APPLICATIONS IN COMPRESSORS
<b>GCS801</b>	Wet, dry, hydrocarbon gases, H2S
<b>GCS803</b>	Lube, all gases Low- medium pressure
<b>GCS805</b>	Air, Pet service
<b>GCS807</b>	Dry Oxygen, Air
<b>GCS809</b>	Lube, Non-Lube, oxygen, nitrogen, hydrocarbon
<b>GCS817</b>	High pressure PET services
<b>GCS847</b>	Non-lube, hydrogen, hydrocarbon, carbon dioxide
<b>GCS849</b>	Dry, N2, Inert gases

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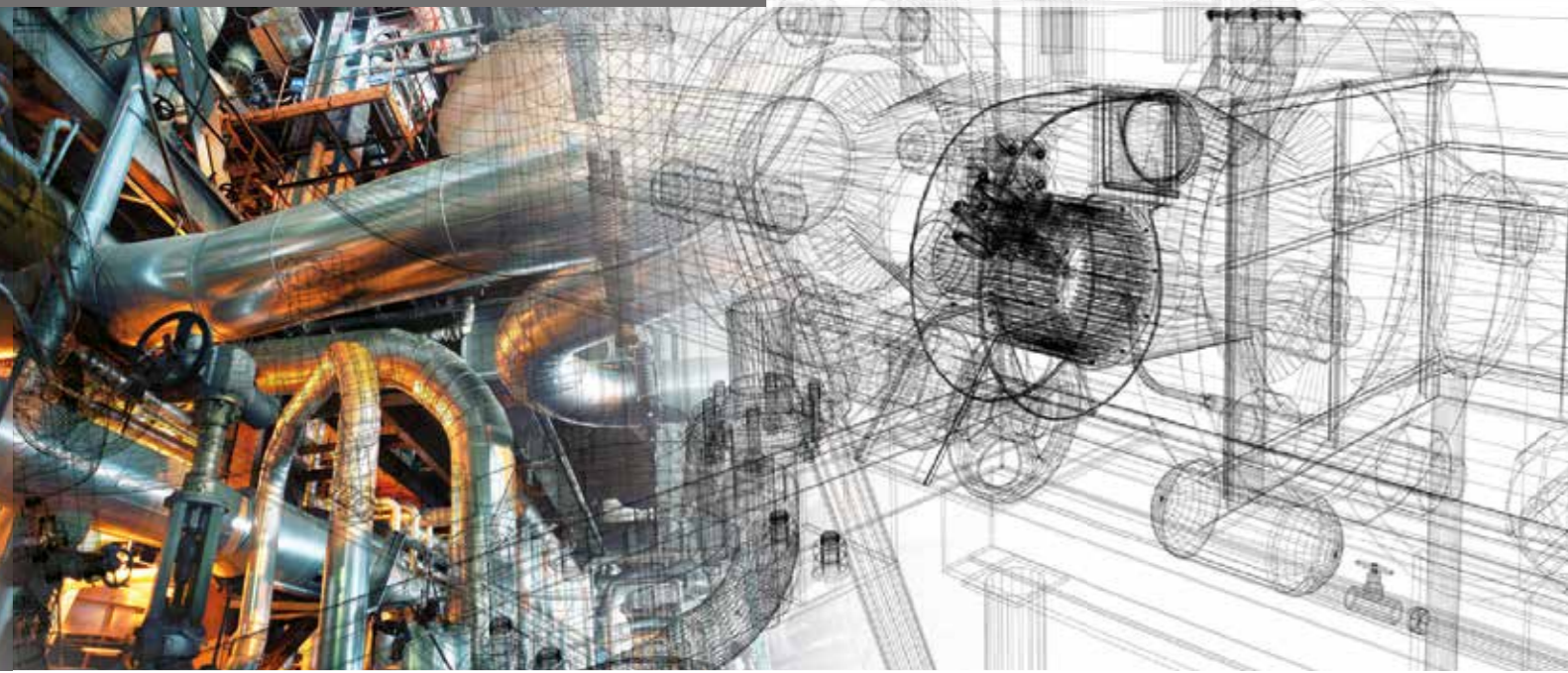
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**AIR & GAS COMPRESSORS**

YOUR CHOICE FOR FLUOROBASED PRODUCTS  
**GUARNIFLON®**

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# GUARNIFLON®

EXPERIENCE AND TECHNICAL  
KNOW-HOW IN PROCESSING  
FLUOROPOLYMER MATERIALS



Since 1982 Guarniflon is focused on the processing of PTFE resins into semi-finished and engineered parts, including high-performance PTFE compounds used in a large variety of industrial applications.

Guarniflon R&D Dept. together with its technical team is in the position to face the increasing demand for high-quality products to be used in all applications where the working conditions are considered "extreme" and where PTFE grades are the unique choice to fulfil special technical requirements.

Compressor applications have been managed, from the very beginning, taking advantage of Guarniflon strong material science and engineering know-how, in order to offer the most suitable PTFE grades according to the specific operating conditions. The role of Guarniflon R&D dept. has been particularly important to develop this special PTFE product family.

For a range of applications, the filled PTFE family provides a superior self-lubricated materials with excellent strength, high hardness and improved wear resistance by combining PTFE with optimized content of fillers. Guarniflon has developed in the years very special formulations by selecting the most performing filler materials, to enhance sliding and self-lubricating properties while granting longer lifetimes, especially in dry gases applications.



## PTFE COMPOUNDS AND PRODUCTS TRACEABILITY



Among the 250 different PTFE compounded grades available at Guarniflon, 8 of them have been developed for compressor applications, based on PTFE materials. The compounded grades are processed at Guarniflon HQ's in Italy thanks to a unique integrated supply chain: the process is made possible thanks to Guarniflon compounding department capable of preparing the specific powders required for the intended use.

From the time the raw materials enter the company to the production of semifinished products, the process is monitored to meet the required quality standards.

Guarniflon internal management system ensures the traceability of orders for qualified products for compressors applications, starting from the raw material compounding, to the production of semi-finished products and finally to the machining of pieces and their final control.

## SPECIAL GRADES FOR GAS AND AIR COMPRESSOR APPLICATIONS

According to the type of gas and working conditions, the most reliable solutions are available from Guarniflon. Just to mention some of them, GCS847 specially developed for "bone dry" gases in non-lubricated working conditions or GCS803 for low-pressure air and gas compressors in oil or oil-free conditions. Many other solutions are available to fulfil customers' technical requirements, in a range of products specially developed for compressor applications. The extremely well-equipped Guarniflon laboratories give the opportunity to develop, test and characterize GCS grades through the following testing procedures:

- Differential Scanning Calorimetry (DSC)
- Thermogravimetric Analysis (TGA)
- Fourier Transform Infrared Spectroscopy (FT-IR)
- Wear Testing ( ASTM D3702 )
- Physical and Mechanical Properties Testing

Thanks to the specific formulations and to the selection of filler materials, the sliding wear behaviour and self-lubricating properties of filled PTFE materials have been improved to give longer lifetimes, especially in dry gases. Only if operated under conditions of intermittent oil supply, a high ring wear may occur. Rider bands & piston rings and packing are machined from PTFE with various fillers to enhance the properties of the materials. All of them are processed by moulding or made from proprietary hot compression moulding.

## MOST USED MATERIAL GRADES



### GCS801

A propriety PTFE based sealing material, recommended for oil-free natural gas applications, H<sub>2</sub>S containing gases and carbon dioxide. It boasts better lubricity properties and can be used in lubricated conditions.

### GCS803

Standard PTFE grade suitable for low-pressure air and gas compressors. This material is recommended for lube and non-lube conditions, one of the most used grades. It is resistant to most chemicals.

### GCS805

Thanks to its special fillers, it boasts better thermal conductivity than other PTFE filled grades. Recommended for non-lubricated high temperature and high-pressure wet air compression applications systems such as PET compressors, with working temperatures up to 200 ° C.

### GCS807

One of the most used PTFE grades applied in oxygen compressors and dry gas compressors. It can be used in dry or lubricated conditions according to the kind of gas environment.

### GCS809

PTFE based compound with optimized content of glass fiber filler. It can be used in lubricated as well as in dry-running service according to the kind of gas environment. Developed for the applications where the colour of the product should be white.

### GCS817

PTFE based material with better thermal conductivity than carbon and glass filled PTFE compounds. Well performing in heavy duty PET compressors at non-lubricated conditions.

### GCS847

Proprietary polymer alloy for use on non-lubricated gas compressors, extremely high performance in non-lubricated application than traditional PTFE compounds. Well performing with bone-dry gases with a very low dewpoint.

### GCS849

Advanced PTFE material with specially optimized content of polymeric fillers which is proven for inert gases at bone-dry gas conditions. Suitable for compressor applications with dry nitrogen, dry argon or dry helium environments working at low – medium pressures. It has excellent wear resistance.

