

WHITEPAPER



# PTFE Y005 GUIDE BAND FOR FOOD APPLICATIONS

FOOD COMPLIANCE AND LONG SERVICE LIFE IN THE FOOD INDUSTRY

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# PTFE GUIDE BAND FOR FOOD APPLICATIONS

## PTFE GUIDE BAND MADE OF SPECIAL COMPOUND Y005 WITH REDUCED TENDENCY TO EXTRUSION

### Initial Situation

In food applications where guide bands come into direct contact with the medium, the material used must meet general regulatory requirements.

Guide bands are used in various machines in the food industry to compensate for lateral forces and deflections. This requires compressive strength. At the same time, the material used must be sufficiently flexible to avoid damage during mounting. The standard material for these applications so far, a PTFE carbon compound, meets both requirements and has a long service life. But it is no longer recommended for the manufacture of food equipment.

During benchmarking, the comparable combinations of approved materials demonstrated that they do not stand up to strong forces in homogenizers, for example, and have a tendency to gap extrusion. This leads to increased wear, greatly reducing service life. Manufacturers in the food industry must equip their production processes in compliance with the guidelines. To do so, they need guide bands made of materials that are approved for contact with foods, offer a balanced relationship between compressive strength and flexibility, and guarantee an appropriate service life.

### The Freudenberg Solution

The leading technology specialist for sealing solutions, Freudenberg Sealing Technologies Process Seals has taken on the task of developing innovative, customer-oriented solutions to meet the special requirements of the market. In this case, the goal was to devise a material that met the requirements for approval based on the new guidelines, demonstrate high resistance to CIP and SIP cleaning agents, and achieve a defined balance between compressive strength and flexibility.

The development objectives were successfully attained with the newly developed Freudenberg special PTFE compound Y005. At both 80 °C (176 °F) and 120 °C (248 °F), the material exhibits up to 75 percent less tendency to extrusion than other materials approved for food applications.

Comprehensive tests and the first production conversions by manufacturers confirmed the outstanding material characteristics of the special PTFE compound Y005. The tendency to extrusion has been minimized, resulting in less wear and ensuring longer guide band stability. With the new food-grade material, Freudenberg is offering equipment manufacturers a much more wear-resistant – and thus economically attractive – alternative to other approved guide bands.



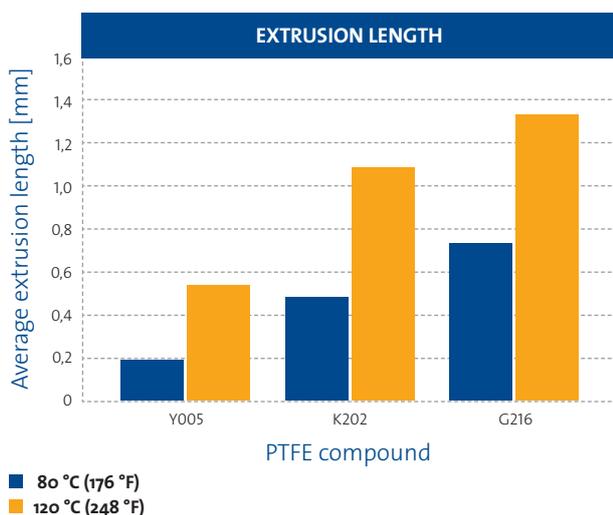
### Early Production Conversions Confirm Functionality and Longevity

One leading equipment manufacturer initially used guide bands made from an approved PTFE glass compound for the conversion of its homogenizer in accordance with regulatory guidelines. But this led to increased complaints, since the guide bands showed greater wear than the carbon-filled guide bands that were used previously, drastically reducing the service life of the high-pressure homogenizers.

In its search for more reliable solutions, the company contacted sealing specialists at Freudenberg. They recommended a conversion to guide bands made of the special PTFE compound Y005. The results of the six-month test phase were so convincing with regard to the material's functionality and durability that the manufacturer converted its entire product line over to the new guide band's quality. In addition to the outstanding material characteristics, the excellent price-performance ratio was a crucial factor in the decision.

### THE ADVANTAGES AT A GLANCE

- Load capacity
  - High compressive strength with flexibility at the same time
  - Resistant to CIP and SIP cleaning agents little inclination to extrusion
- Long operating life
  - Low wear ensures long service life
- Versatile applications
  - Extremely varied sizes up to 200 mm, available on short notice thanks to turning technology production
- Suitability under food regulations
  - Approved by FDA and under (EU) Directive No. 10/2011



An extrusion test in the Freudenberg Sealing Technologies materials laboratory shows the clear difference between Y005 and the PTFE compounds used until now.



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**The Specialist in the Processing Industry**

The technology specialist Freudenberg Sealing Technologies is a supplier, development and service partner for customers from a variety of market segments, such as the automotive industry, civil aviation, mechanical engineering and shipbuilding, food processing and pharmaceuticals, or the agricultural and construction machinery industry. On the basis of the Simmerring developed by Freudenberg in 1929, Freudenberg Sealing Technologies now has a broad and continuously customer-oriented product portfolio of seals. Based on detailed process knowledge, innovative development methods and selected materials, the range includes both customized individual solutions as well as complete seal packages.

Together with its partners NOK Corporation, Japan, USA, Sigma Freudenberg NOK, India, and NOK-Freudenberg Group China, Freudenberg Sealing Technologies forms a global network which aims to supply its customers all over the world with products of the same high quality.

Freudenberg Sealing Technologies Process Seals is the sealing specialist for demanding applications in the food, beverage, chemical and pharmaceutical industries.