

# 2015

SIGRAFLEX®  
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1972  
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## SIGRAFLEX® APX2® yarn: New development in demand offers maximum protection from oxidation

Since Polycarbon Inc. became a part of the company in 1980, packing yarns have been part of SGL Carbon's portfolio of sealing materials. Initially, it consisted exclusively of carbon and graphite textile yarns (also known as fiber or filament yarns). These were then produced from rayon, pitch and polyacrylonitrile fibers as starting materials.

Packing yarns are relatively soft, pliant fibers which are braided into various shapes and sizes. The resulting products, so called braided, compression or stuffing box packings are processed into packing rings, which are the oldest and still most common sealing devices. They are used in various industries like chemical and petrochemical, pulp and paper, power plants or marine, and seal all types of fluids e. g. in valves, pumps, mixers, and agitators.

Pitch yarns were taken out of the program over the years, but foil yarns were newly added as complement. Since, SGL Carbon has always been the quality leader with the broadest portfolio in the flexible graphite foil market. So, it was naturally to add a wide selection of foil yarns, too.

Foil yarns are made from graphite foil tapes that are interwoven with fibers or wires for reinforcement. Materials used for reinforcement include cotton, glass fiber, stainless steel, synthetic fibers or carbon fiber.

As early as the 2000s, SGL Carbon offered a wide range of foil yarns with different reinforcements. The development work was carried out both in the Research & Development department at our German site in Meitingen and at our Yarns Competence Center in Valencia/CA, USA. At that time, our Sales was increasingly approached by customer requests for high-temperature resistant and at the same time high-purity braided packings with excellent mechanical properties.

Initiated by Andrew James und Mike Römmler, the focus of the yarn development work in the early 2000s was increasingly placed on the production of foil yarns with Inconel® 601 as reinforcement. Inconel 601 is a nickel chromium iron alloy that is extremely resistant to temperature and corrosion. It is, so to speak, an ideal partner for the SIGRAFLEX APX2 foil



SIGRAFLEX APX2 yarn for oxidation resistant braided packings

launched in 2004, the best-in-class graphite foil when it comes to temperature and oxidation resistance.

In 2015, the new SIGRAFLEX APX2 flexible graphite foil yarn, made from SIGRAFLEX APX2 foil with Inconel 601 wire reinforcement, was ready for the market. It was presented to the general public atACHEMA 2015 as the foil yarn offering maximum protection against oxidation.

To this day, SIGRAFLEX APX2 foil yarn impresses with its unmatched performance: resulting from a combination of low friction, flexibility, resilience, purity and excellent media resistance. Because it is manufactured without binders or adhesives, it does not become brittle. And due to its high thermal conductivity, heat generated by friction can be dissipated quickly and safely. And the wire reinforcement provides additional tensile strength as well as pressure and extrusion resistance.

Without doubt, graphite in its various forms is responsible for extending the performance of the packed gland. With the use of SIGRAFLEX APX2 foil, SGL Carbon pushed back boundaries once again and set new standards for oxidation and

media resistance and mechanical properties.

With the addition of the foil yarn, the SIGRAFLEX APX2 product family already included three different products, all of

which stand for maximum oxidation protection. In 2020, another family member was launched: SIGRAFLEX APX2 coating for packings.

\* Inconel® is a registered trademark of Special Metals Corporation