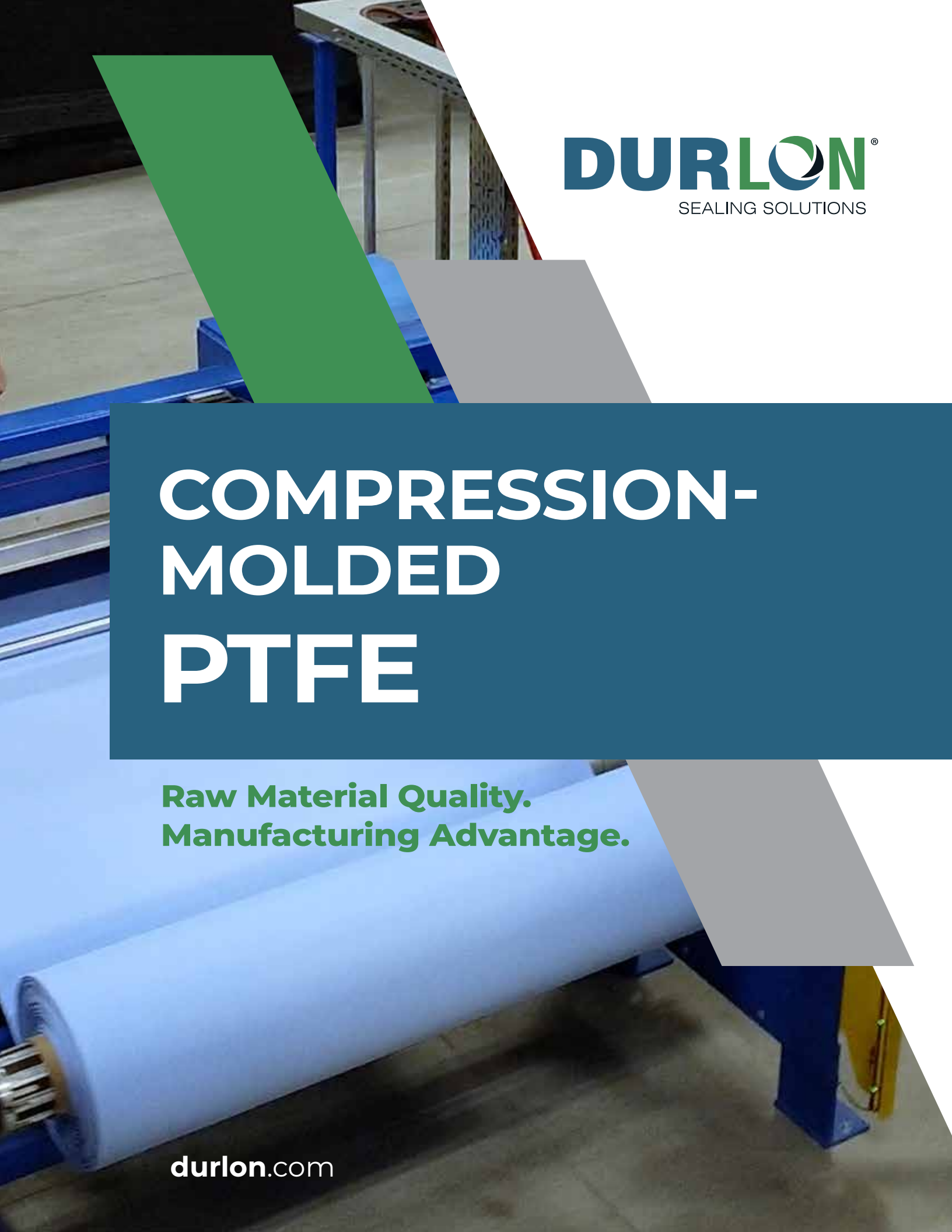
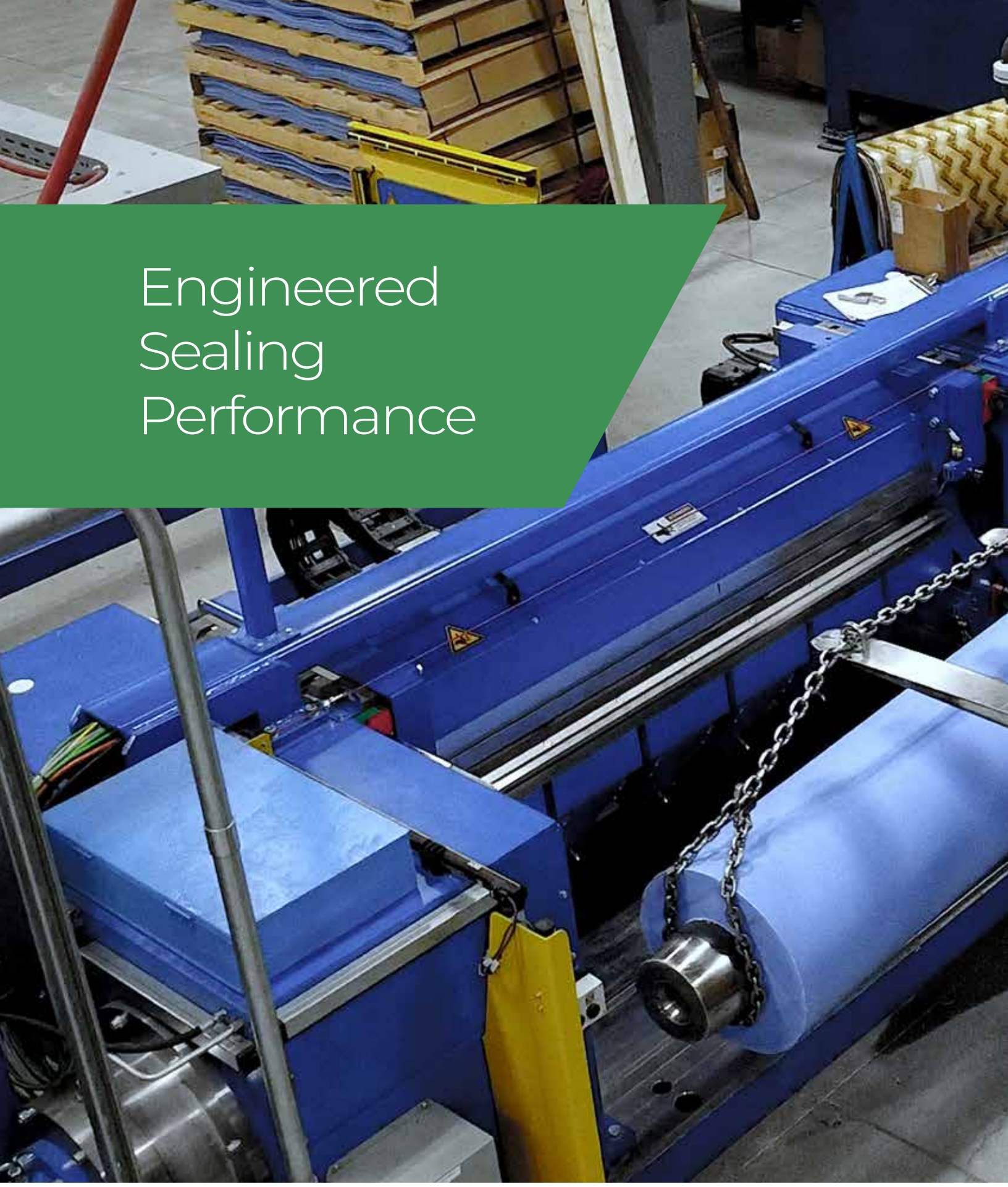


DURLON®
SEALING SOLUTIONS

# COMPRESSION-MOLDED PTFE

**Raw Material Quality.**
**Manufacturing Advantage.**

durlon.com



# Engineered Sealing Performance


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# DURLON® COMPRESSION-MOLDED PTFE

**Engineered sealing performance through material purity, density, and process control.**

Durlon® compression-molded PTFE materials are engineered to deliver the chemical resistance expected from PTFE with the added performance advantages created through controlled formulation, billet molding, and precision skiving. For applications where leakage control, chemical compatibility, and long-term reliability matter, Durlon® filled PTFE materials provide a proven sealing platform.

Compression-molded PTFE is engineered for demanding applications where dependable performance and long service life are essential. PTFE is recognized for its exceptional resistance to aggressive media, performance across a wide temperature range, and inherently low coefficient of friction, making it one of the most trusted materials for critical industrial sealing and component applications.

Through compression molding, PTFE can be formed with excellent consistency and controlled density, enabling precise skiving.

This process supports the production of PTFE billets in a range of diameters and dimensions while helping preserve the material properties that make PTFE effective in challenging operating environments.

*This brochure highlights the advantages of Durlon® compression-molded PTFE, including its performance benefits, manufacturing flexibility, industrial applications, and ongoing developments that expand its value in modern sealing applications.*

# WHY PTFE?

PTFE is one of the most widely trusted materials for aggressive service environments. Its outstanding chemical resistance, broad temperature capability, low coefficient of friction, and long-term durability make it a preferred choice in applications where conventional materials may degrade, react, or lose performance.

Across industries, PTFE is used in chemical processing, aerospace, pharmaceuticals, food production, pulp and paper, water and wastewater, and rail tank car applications.

In sealing service, PTFE is valued because it can resist a wide range of corrosive media while maintaining stable performance under demanding operating conditions.

Unlike many thermoplastics, PTFE is not processed by conventional melt-flow methods. Because of its extremely high melt viscosity, PTFE is typically formed using compression molding followed by sintering. This makes the manufacturing process a critical part of the final material performance.

# WHAT IS PTFE COMPRESSION MOLDING?

Compression molding is a specialized process used to convert PTFE powder into dense, functional shapes such as billets, sheets, and gasket materials.

The process begins with careful PTFE powder preparation, followed by controlled loading of the powder into a mold. High pressure is then applied to compact the material into a preform. The compacted PTFE is sintered above its gel point, allowing the particles to fuse into a cohesive structure. Controlled cooling follows, helping manage shrinkage, dimensional stability, and internal stresses.

For gasket sheet production, compression-molded PTFE billets are then skived into sheet form. This combination of compaction, sintering, cooling, and finishing is essential to producing PTFE materials with consistent thickness, density, and sealing performance.

# WHY COMPRESSION MOLDING MATTERS

In gasket applications, the PTFE manufacturing process directly affects how the material performs in service. Compression molding allows PTFE to be processed into dense, uniform structures that support reliable sealing.

A well-controlled compression-molding process helps maintain consistent density and material uniformity. These characteristics are critical in gasket applications, where voids, density variation, or inconsistent sheet structure can affect sealability and long-term performance.

For demanding chemical and process applications, gasket materials must do more than simply resist the media. They must compress predictably, conform to flange surfaces, resist creep, and maintain seating stress over time. Compression molding provides a controlled manufacturing route to support these requirements.



# Material Quality Meets Process Precision

# DURLON® 9000: WHAT MAKES IT DIFFERENT?

Durlon® 9000 is not just another filled PTFE sheet. Its performance is built on the combination of selected raw materials and a manufacturing process designed to produce a dense, uniform gasket structure.

Manufactured using pure PTFE resins and an inorganic filler, Durlon® 9000 is engineered to deliver strong chemical resistance with enhanced sealing performance.

The material's density and structure are tied directly to both formulation and process control, creating a gasket sheet designed for demanding applications where containment matters.

While many competing filled PTFE materials rely on hollow glass microspheres or hollow glass microbeads, Durlon® 9000 is positioned around a denser structure. This difference in material architecture supports its performance in applications requiring low leakage, dimensional consistency, and confidence under load.

# DENSITY & MICROSTRUCTURE ADVANTAGE

Density is more than a number. In filled PTFE gasket materials, it is influenced by raw material selection, filler composition, compaction, and manufacturing conditions, all of which contribute to the finished sheet structure.

Durlon® 9000 has a nominal density of approximately 2.2 g/cm$^3$, compared with several competing filled PTFE materials with reported densities ranging from 1.4 to 1.7 g/cm$^3$. Through controlled formulation and compression molding, Durlon® 9000 is engineered to provide a uniform material structure that supports predictable gasket compression and consistent sealing performance.

While density is an important material characteristic, gasket suitability should also be evaluated based on creep resistance, compressibility, recovery, and leakage performance, particularly in applications where chemical resistance and long-term sealing stability are critical.

# CREEP RESISTANCE

Creep is one of the most important performance considerations for PTFE gasket materials. Under load, PTFE can deform over time, which may reduce gasket stress and affect long-term sealing performance.

Documented creep performance data for Durlon® 9000 are available from ASTM F38-based evaluations. Reported results include creep values at both room temperature and 100°C, helping users better understand gasket behavior under relevant conditions.

It is important that creep performance be evaluated using comparable test methods. Results generated under different loads, temperatures, or durations can create misleading comparisons. Durlon® 9000 provides documented performance data to support informed gasket selection and realistic expectations in service.

The result is a filled PTFE material designed to balance chemical resistance, compressibility, and sealing stability over time.

# LEAKAGE PERFORMANCE

Leakage performance is one of the clearest ways to evaluate gasket capability. Durlon® 9000 is supported by EN 13555 gasket data and helium leakage testing that help quantify sealing performance under defined conditions.

Durlon® 9000 demonstrates low helium leakage across demanding tightness classes, supporting its use in applications where emissions control, process containment, and environmental responsibility are critical..

For engineers and specifiers, this data-driven approach helps move gasket selection beyond generic material descriptions and toward measurable sealing performance.



# THICKNESS CONTROL, YIELD, AND MANUFACTURING CONSISTENCY

Precision matters in gasket sheet production. Thickness control affects gasket compression, load distribution, installation reliability, and finished gasket yield.

Durlon's billet-molded and skived PTFE process supports consistent sheet production across a broad thickness range. The new skiving lathe is capable of achieving the following sheet thickness tolerances:

Up to 1/64 in. (0.40 mm): ±5%
1/64 to 1/16 in. (0.40–1.59 mm): ±4%
1/16 to 1/8 in. (1.59–3.18 mm): ±3%
1/8 in. to 8 mm (3.18–8.00 mm): ±2%

Compared with calendered PTFE, billet molding and skiving can offer advantages in yield, property consistency, surface characteristics, and thickness range. A rougher skived surface may also provide improved grip in gasket applications.

Durlon® PTFE gasket material is manufactured by compression molding PTFE billets, which are subsequently skived into continuous rolls (approximately 110 feet in length at a thickness of 1/8 in.) using advanced skiving equipment at TFC. This process allows for thickness tolerances to be controlled within ±0.0015 mm.

Using long, continuous skived PTFE rolls enables more effective nesting optimization during flash-cutting operations.

By strategically arranging gasket profiles to minimize edge trim and unused material, the number of gaskets produced per billet can be increased while reducing scrap generation. In contrast, conventional 60" × 60" sheets have inherent edge limitations, where a portion of each sheet is typically lost during trimming, resulting in additional material waste.

Based on our internal nesting strategies and estimates, material yield can be improved by approximately 11–17%, which is particularly beneficial given the relatively high cost of PTFE gasket materials. These yield improvements can result in significant material savings over large production volumes.

For customers, manufacturing consistency means fewer surprises: more predictable installation, reliable sheet utilization, and greater confidence in repeat gasket performance.



# Smarter Manufacturing

# COMPRESSION-MOLDED PTFE PRODUCT FAMILY




## DURLON® 9000

### High-Performance Filled PTFE

Inorganic Filler with Pure PTFE Resins
Filled PTFE Gasket Material
ASTM F104: F452111-A9B5E11K6M6

Durlon® 9000 is a blue, inorganic-filled PTFE gasket material engineered for process piping and equipment handling highly aggressive chemicals. Its non-wicking filler system helps reduce the potential for flange-face corrosion while providing improved dimensional stability compared with virgin PTFE.

Recommended industries include chemical processing, pulp and paper, food and beverage, pharmaceutical, marine, oil and gas, power generation, mining, water and wastewater, and rail tank car service. Its dielectric properties also support flange-isolation applications where PTFE sheet gasketing is suitable.

Certifications and compliance: FDA 21 CFR 177.1550, USP Class VI, WRAS, TA-Luft VDI 2440, ABS-PDA, DNV-GL, Chlorine Institute Pamphlet 95, EC 1935/2004 and EU 10/2011. Durlon® 9000 has also passed the API 6FA fire test.




## DURLON® 9000N

### Unpigmented High-Purity Filled PTFE

Inorganic Filler with Pure PTFE Resins
Filled PTFE Gasket Material
ASTM F104: F452111-A9B5E11K6M6

Durlon® 9000N is the unpigmented white version of Durlon® 9000, combining pure PTFE resins with engineered inorganic fillers. It provides resistance to highly aggressive chemicals while offering improved resistance to cold flow compared with virgin PTFE. Its non-wicking filler geometry also helps protect flange surfaces from corrosion.

The white formulation is well suited to applications where material color, cleanliness, or contamination control is important. Typical industries include pharmaceutical and bioprocessing, food and beverage, chemical processing, pulp and paper, marine, rail tank car, water treatment and other general process industries. It has been used in high-purity service and applications involving chlorine and caustic media.

Certifications and compliance: FDA 21 CFR 177.1550, USP Class VI at 121°C, ABS-PDA, EC 1935/2004 and EU 10/2011.


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## DURLON® 9002

### PTFE for Oxygen and Cryogenic Service

Inorganic Filler with Pure PTFE Resins
Filled PTFE Gasket Material
ASTM F104: F452111-A9B5E11K6M6

Durlon® 9002 is an inorganic-filled PTFE gasket material developed for demanding oxygen and cryogenic systems. It is suited to piping and equipment used in industrial gas production, chemical processing, pharmaceutical manufacturing, LNG and marine service, and other applications involving gaseous oxygen, liquid oxygen or very low temperatures.

The material is manufactured without secondary heat treatment before gasket cutting. Finished gaskets intended for oxygen service must undergo appropriate cleaning and packaging. Oxygen-cleaned gaskets are available in accordance with European Industrial Gases Association cleaning guidance.

Certifications and testing: FDA 21 CFR 177.1550, BAM testing for gaseous and liquid oxygen service up to 260°C and 52 bar, and LOX mechanical-impact testing to ASTM G86 and ISO 21010 with zero reactions in 20 tests. Durlon® 9002 is also RoHS/REACH compliant and DNV-GL approved.



## DURLON® 9400

### Carbon-Filled PTFE for HF and AHF Service

Carbon Filler with Pure PTFE Resins
Filled PTFE Gasket Material
ASTM F104: F452111-A9B5E11K6M6

Durlon® 9400 is a black, carbon-filled PTFE gasket material engineered for highly aggressive chemical service, particularly hydrofluoric acid and anhydrous hydrogen fluoride. It is recommended for chemical-processing equipment, acid production and transfer systems, pharmaceutical and food-processing equipment, general industrial piping, and AHF rail tank cars.

The formulation provides the chemical resistance and sealability associated with PTFE while improving resistance to cold flow. Its electrically conductive properties also make it suitable where flange electrical continuity is required. Durlon® 9400 can be considered where barium-sulfate-filled PTFE may not be appropriate for the process media.

Certifications and compliance: Conformance with FDA requirements for food and drug contact, approval in accordance with the Hydrogen Fluoride Industry Practices Institute's Materials of Construction Guideline, and RoHS/REACH compliance.



# FIRE SAFETY AND CERTIFICATIONS

Demanding service environments often require more than chemical resistance. Fire safety, emissions control, and application-specific qualification can be important parts of gasket selection.

Durlon's filled PTFE platform is supported by application-focused testing, including fire-safety evaluation for specific constructions.

Durlon® 9000 gasket material, tested in a 6-inch Class 300 configuration, has passed the API Standard 6FA, Third Edition, fire test. Certification needs can vary by application, industry, and end-user specification. For example, API 6FB may be relevant in certain gasket applications, depending on service requirements.

Durlon® can support customers with current certification status, available test data, and application-specific recommendations to help select the appropriate gasket material for demanding service conditions.

# APPLICATION AREAS

Compression-molded PTFE materials are used across a wide range of industries because of their chemical resistance, durability, and stability in aggressive environments.

Typical PTFE applications include chemical-processing components, valve liners, pipe linings, containers, gaskets, aerospace seals, bearings, electrical insulation, food-processing components, and railcar and medical applications where nonreactive material properties are important.

For sealing applications, Durlon® filled PTFE materials are well suited for:

- Process water
- Hydrocarbon lines
- Hydrogen service
- Compressed air
- Aggressive chemicals
- Steam systems
- General plant utilities
- High-risk containment

Where process safety, emissions control, and chemical compatibility are priorities, filled PTFE gasket materials provide a strong sealing solution.

# SUSTAINABILITY AND FUTURE DIRECTION

Durability is part of sustainability. In demanding sealing applications, longer service life can reduce replacement frequency, maintenance activity, material waste, and unplanned downtime.

PTFE is non-biodegradable, so responsible material use and manufacturing efficiency are important.

Future development in compression-molded PTFE is expected to include greater automation, real-time defect detection, hybrid PTFE composites, renewable energy applications, and miniaturized components for electronics and advanced technologies.

For Durlon®, the sustainability message is grounded in performance: engineered materials, controlled manufacturing, fewer replacements, and reliable sealing over time.



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