DURLON®
SEALING SOLUTIONS



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SEALING SOLUTIONS FOR

Oil & Gas Industry



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Our Vision

Evolution isn't a choice in today's business landscape; it's the only way to succeed.

Progress relies on everything moving forward, from people to machinery to production. Everything must flow.

As we engineer our way to a better world, we are breaking down barriers, making sure each process is in place, always reflecting and improving. We are experts at delivering the best sealing solutions to help our customers unlock their highest potential.

Our global community of industry-leading specialists drive our innovative production and materials to consistently raise the bar.

Whether subjected to the stresses of everyday use, specialized applications, high-temperature environments, or liquid and gas service, our products are engineered to provide reliable sealing integrity.

At Durlon, we succeed when you succeed.

DURLON®
SEALING SOLUTIONS

Sealing Solutions for **Oil and Gas**

The oil and gas industry is a major global sector encompassing the exploration, production, processing, refining, transportation, storage, and distribution of hydrocarbons and petroleum products. The industry plays a critical role in meeting the world's energy needs, providing fuel for transportation, heating, and electricity generation, as well as a wide range of other industrial and consumer applications. Here is an overview of the oil and gas industry, including its flow process and major challenges.

Exploration and Production

The first stage in the oil and gas industry is exploration, which involves the search for underground reservoirs of hydrocarbons, such as oil and natural gas. This is typically done using a combination of geologic, geophysical, and seismic data analysis, as well as drilling exploratory wells to assess the presence and quality of the hydrocarbon deposits.

Once a viable reservoir is identified, the production phase begins. This involves drilling one or more production wells to extract the hydrocarbons, using a variety of technologies and techniques to optimize the efficiency and optimize production. Produced fluids are typically gathered and separated before crude oil and natural gas are transported to appropriate processing, storage, or refining facilities.

Refining and Processing

Crude-oil refining and natural-gas processing involve different process routes. Crude oil is separated and converted into products such as gasoline, diesel fuel, jet fuel, and other refinery streams, while natural-gas processing removes water, contaminants, and heavier hydrocarbons to produce pipeline-quality gas and recoverable natural-gas liquids. Crude oil is first separated into fractions primarily by distillation. Subsequent conversion and treating processes may include cracking, reforming, hydrotreating, alkylation, and blending.

Once the different fractions are separated, they are subjected to further processing and treatment to remove impurities and improve their quality and properties. This may involve additional refining steps, such as hydrotreating, reforming, and alkylation, as well as the addition of additives and other chemicals to enhance the performance and environmental characteristics of the final products.

Distribution

Once the refined products are produced, they are transported to various distribution points, such as terminals, pipelines, and storage facilities. From there, they are delivered to retailers, wholesalers, and other end users, such as gas stations, airports, and industrial consumers.

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Challenges and Opportunities

The oil and gas industry faces a number of challenges and opportunities in the current global economy. One of the major challenges is the transition toward lower-carbon future, which is driving increased investment in alternative energy sources, such as wind, solar, and biofuels. This has led to growing pressure on the industry to reduce its carbon footprint and adopt more sustainable practices.

Another major challenge is the volatility of oil and gas prices, which are subject to a range of economic, political, and environmental factors. Companies must be able to navigate these fluctuations in order to remain competitive and profitable, while also investing in new technologies and innovations to improve efficiency and reduce costs.

Despite these challenges, the oil and gas industry remains a vital and dynamic sector that plays a critical role in meeting the world's energy needs. As the global economy continues to evolve and transform, the industry must adapt and innovate in order to stay ahead of the curve and continue to provide value to its customers and stakeholders.





Innovative products
Unparalleled service

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Durlon® Durtec®

Specially Engineered Metal Core Technology

Durtec® is a registered trademark of Triangle Fluid Controls Ltd.

Durlon® Durtec® gaskets are made with a specially engineered machined metal core that is bonded on both sides with soft covering layers, typically flexible graphite. The core is produced by proprietary technology that allows the finished gasket to provide mechanical support and dimensional stability. The Durtec® core is virtually uncrushable, unlike conventional corrugated metal core gaskets. The precision construction is designed to provide reliable sealing performance, including at relatively low gasket seating stresses.

The Durtec® gasket is designed to withstand high temperatures and pressures, to be blowout resistant, to be fire safe, and to resist toxic and or corrosive chemicals for such applications as: pipeline flanges, valves, small & large pressure vessels, heat exchangers, towers, and tanks.

Gasket Factors	
Gb psi (MPa)	187 (1.29)
a	0.467
Gs psi (MPa)	0.5 (0.003)
m, Y psi (MPa)	1.5, 833 (5.74)

Certifications	
Fire Test**	API 607, 4th edition with Exxon modifications
RoHS and REACH-Declaration	Compliant

***Passed modified API 607 fire test and meets the requirements of Shell Specification MESC SPE 85/203 & PVRC SCR Flexible Graphite Spec for FG 600 material.*

Physical Properties*	
Temperature: Min Max Continuous, Max	 -200°C (-328°F) 450°C (842°F) 400°C (752°F)
pH range, Room Temperature	0–14
Pressure: Max, bar (psi)	430.9 (6,250)

**Actual performance and service life are dependent upon material selection, operating conditions and environmental factors.*

SIZE, TYPES & MATERIALS:

- Standard sizes in accordancew with ASME, DIN, JIS and BS EN dimensional standards
- Non-standard flanges ½" in. through 157" in. diameter
- Standard core material is 316L stainless steel. Other core materials: SS304, SS321, SS316Ti, Monel®, Titanium, Hastelloy® & Alloy 20 can be manufactured to your specifications on request
- Alternate facing material is available upon request. Popular materials include Durlon® 9600 expanded PTFE (ePTFE), mica & ceramic

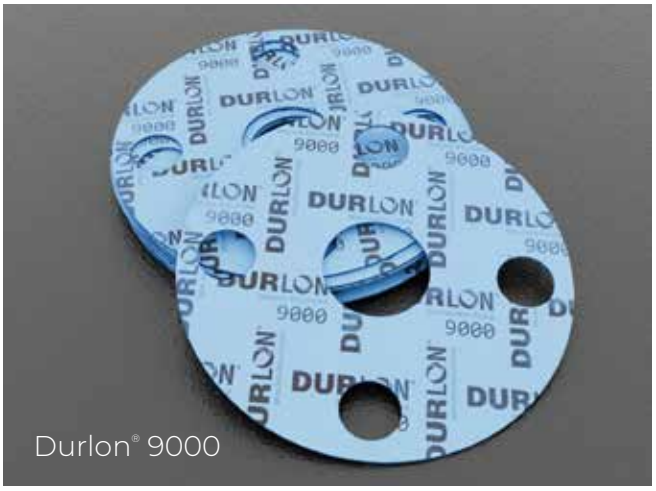
API 607 fire test:

- Average bolt torque loss (with no adjustments): Upstream 45%; Downstream 33%
- Fire, Cool-Down & Post-Burn: Combined Leak Rate (2 gaskets) 0 mL/min at 30 psig avg.
- Exxon requirements post burn: Combined Leak Rate (2 gaskets) with no flange bolt re-torques at any test pressure 0 mL/min at 30 psig, 0 mL/min at 50 psig, 0 mL/min at 100 psig and 0 mL/min at 200 psig.

Durlon® Product Recommendations



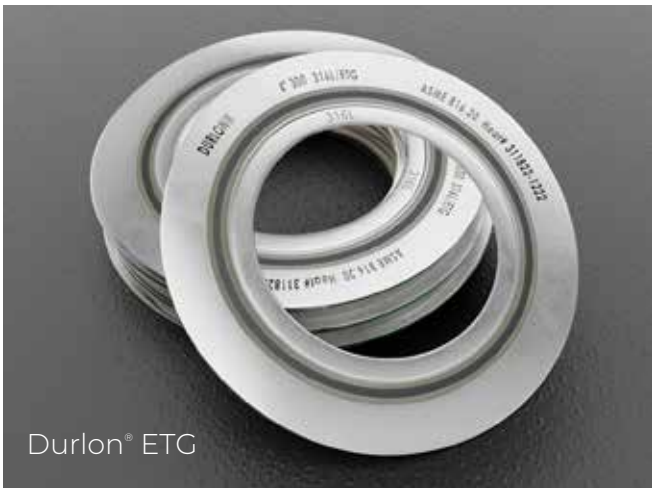
Durlon® 8900



Durlon® 9000



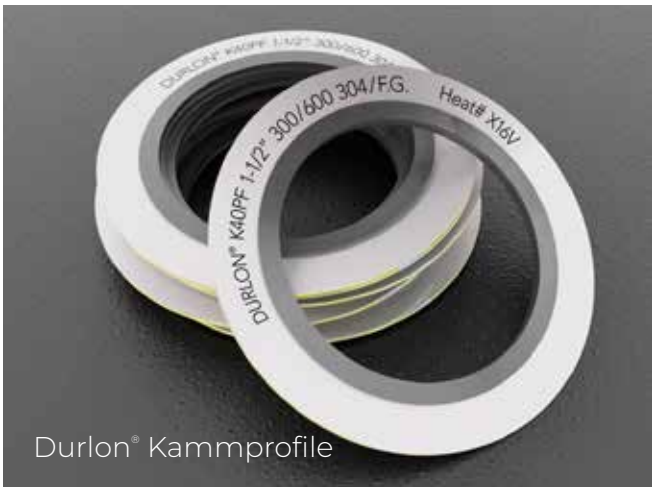
Durlon® SWG DRI



Durlon® ETG



Durlon® Durtec®



Durlon® Kammprofile

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Physical Properties & Certifications

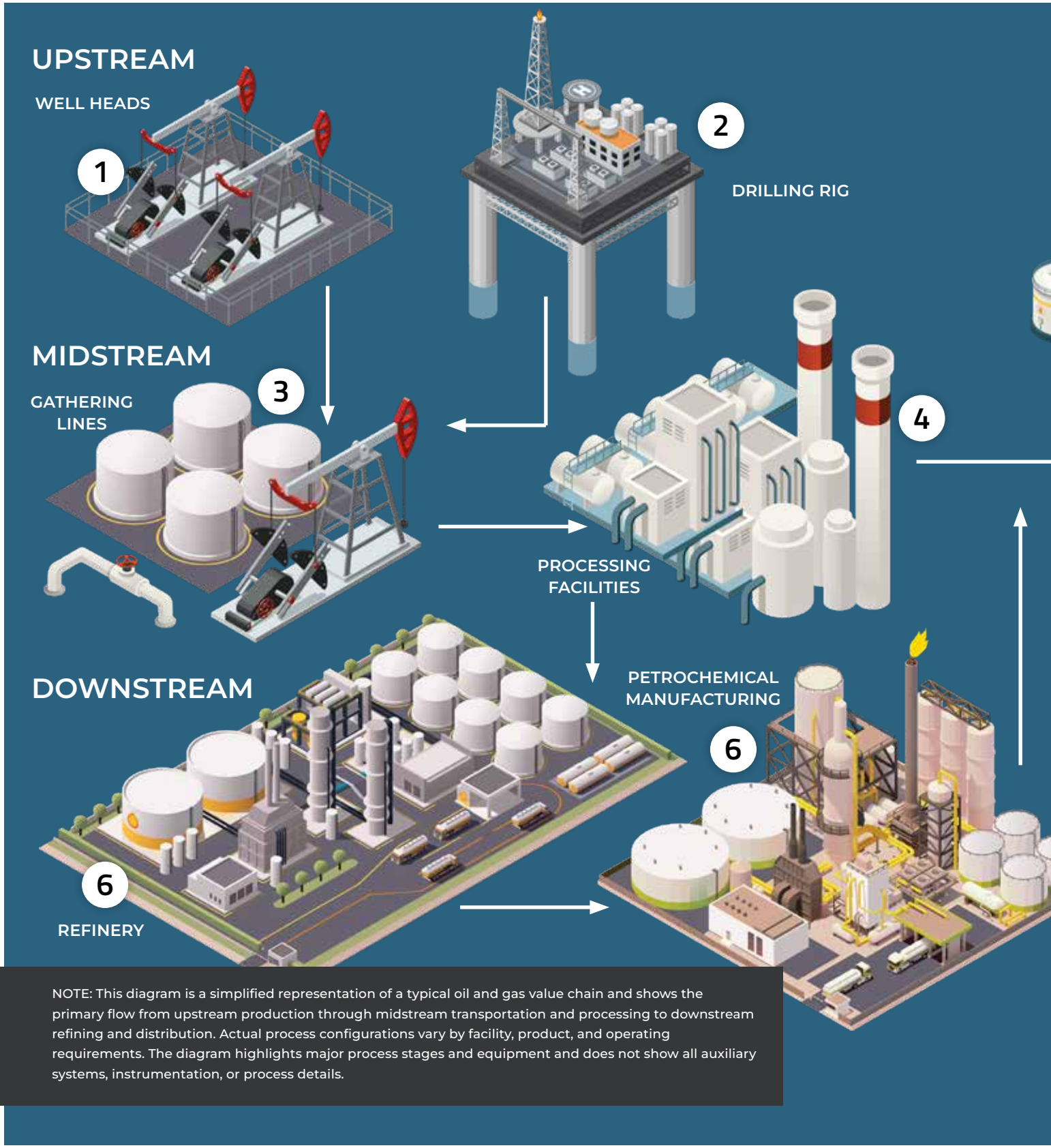
Physical Properties	8900	9000	SWG	ETG	Durtec®	Kammprofile
Composition	Aramid -Inorganic NBR	Inorganic Filler / Pure PTFE Resins	Spiral Wound Gasket	Extreme Temperature Gasket	Specially Engineered Metal Core Technology	Grooved Metal Gasket / Covering Layers
Color	Black	Blue	Style: DRI	SWG / Durtec® / Kammprofile	-	Metal
Temperature: Min Max Continuous, Max	-40°C (-40°F) 496°C (925°F) 400°C (752°F)	-212°C (-350°F) 271°C (520°F) 260°C (500°F)	-	-200°C (-328°F) 450°C (842°F) 400°C (752°F)	-200°C (-328°F) 1,000°C (1,832°F) 650°C (1,200°F)	-200°C (-328°F) 450°C (842°F) 400°C (752°F)
Pressure, max, bar (psi)	138 (2,000)	103 (1,500)	-	-	430.9 (6,250)	414 (6,000)
Density, g/cm³ (lb/ft³)	1.6 (100)	2.2 (138)	-	-	-	-
Compressibility, %	7–17	8–16	-	-	-	-
Recovery, %	50	40	-	-	-	-
Creep Relaxation, %	15	30	-	-	-	-
Tensile Strength, MPa (psi)	13.8 (2,000)	13.8 (2,000)	-	-	-	-
Sealability ASTM F2378 (Nitrogen)	0.2 mL/min	0.01 mL/min	-	-	-	-
pH range, Room Temperature	-	-	-	-	0–14	-

Durlon® SWG - All Durlon® SWG's are manufactured in accordance with ASME B16.20. Quality Assurance complies with API Specification Q1 and ISO 9001 standards. Super-inhibited graphite meets the requirements of Shell Specification MESC SPE 85/203 and meets PVRC SCR Flexible Graphite Spec for FG 600 material.
Durlon® ETG adds an inner and outer protection boundary in the form of a mica-phyllosilicate based sealing material - Durlon® HT1000® : consists of phlogopite mica paper impregnated with an inorganic binder at less than half the binder amount found in a typical vermiculite-phyllosilicate filled product. This lower binder content allows for superior weight retention and results in ultimate extreme temperature sealing performance.
Durlon® Durtec® - Actual performance and service life are dependent upon material selection, operating conditions and environmental factors.
Durlon® Kammprofile - Actual performance and service life are dependent upon material selection, operating conditions and environmental factors.

Style	Certifications
8900	Tested in accordance with ANSI/API 607, 6th Edition, with zero leakage; RoHS and REACH Declaration compliant.
9000	Passed API 6FA, 3rd Edition Fire Test, Meets USP Plastic Class VI requirements at 121°C (250°F), Conforms to FDA 21 CFR 177.1550, TA-Luft (VDI Guideline 2440) approved material, ABS-PDA & listed in Chlorine Institute Pamphlet 95, (EC) 1935/2004 & EU (10/2011) approved material.
SWG	TA-luft (VDI Guideline 2440), Tested to API 6FB in a 6 in. Class 300 SWG FG
ETG	API 6FB, Fourth Edition 2019, Type 1 (Onshore Test), API 6FB, Fourth Edition 2019, Type 2 (Offshore Test), API 607, 4th edition Fire Test with Exxon modifications.
Durtec®	Passed modified API 607 fire test and meets the requirements of Shell Specification MESC SPE 85/203 & PVRC SCR Flexible Graphite Specification for FG 600 material, RoHS and REACH Declaration compliant.
Kammprofile	RoHS and REACH Declaration compliant.

Note: ASTM properties are based on 1/16" sheet thickness, except ASTM F38 which is based on 1/32" sheet thickness. This is a general guide only and should not be the sole means of accepting or rejecting this material. The data listed here falls within the normal range of product properties, but should not be used to establish specification limits nor used alone as the basis of design. For applications above Class 300, contact our technical department.
Warning: Durlon® gasket materials should never be recommended when both temperature and pressure are at the maximum listed. Properties and applications stated are typical. No applications should be undertaken by anyone without independent study and evaluation for suitability. Never use more than one gasket in one flange joint and never reuse a gasket. Improper use or gasket selection could cause property damage and/or serious injury. Data reported is a compilation of field testing, field service reports and/or in-house testing. While the utmost care has gone into publishing the information contained herein, we assume no responsibility for errors. Specifications and information contained within are subject to change without notice. This edition cancels and obsoletes all previous editions.

Oil Production Process Flow Diagram



NOTE: This diagram is a simplified representation of a typical oil and gas value chain and shows the primary flow from upstream production through midstream transportation and processing to downstream refining and distribution. Actual process configurations vary by facility, product, and operating requirements. The diagram highlights major process stages and equipment and does not show all auxiliary systems, instrumentation, or process details.

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The oil and gas industry is divided into three main segments: Upstream, Midstream, and Downstream.

Here is an overview of each segment:

UPSTREAM

The upstream phase includes exploration, drilling, well completion, and the production of crude oil and natural gas.

1. Well heads: Control the flow and pressure of fluids produced from the well, using equipment such as wellheads, valves, chokes, artificial lift systems, and flow-control equipment.

2. Drilling rig: Used to drill and construct oil and gas wells using drilling rigs, drill bits, drill pipe, casing, mud systems, and cementing equipment.

MIDSTREAM

The mid-stream phase includes gathering, processing, transportation, and storage of crude oil, natural gas, and related hydrocarbon streams.

3. Gathering lines: Transport produced fluids from well sites to separation, processing, storage, or transmission facilities.

4. Processing facilities: Separate and condition produced oil and gas through processes such as separation, dehydration, contaminant removal, compression, and stabilization.

5. Transportation: Moves crude oil, natural gas, and related products between production, processing, storage, refining, and distribution facilities using pipelines, ships, railcars, and trucks.

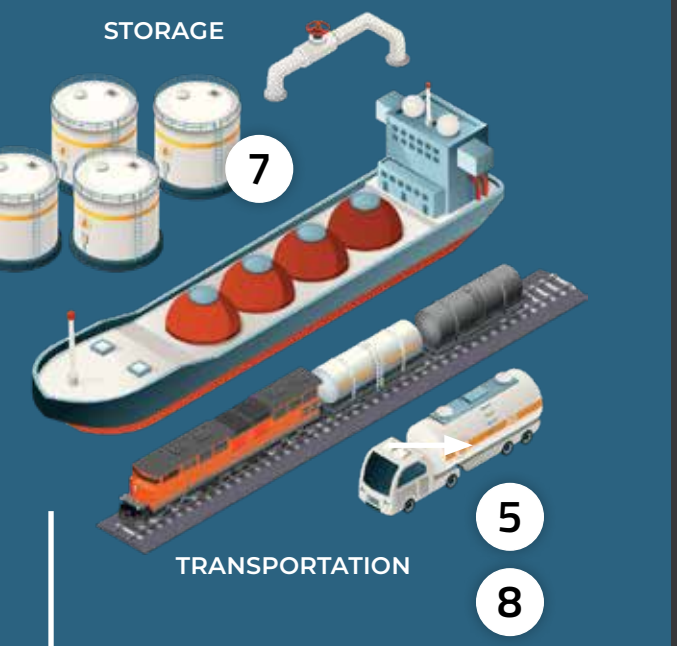
DOWNSTREAM

The downstream phase includes refining, processing, storage, and distribution of petroleum products.

6. Refineries: Convert crude oil into products such as gasoline, diesel, and jet fuel using equipment including distillation columns, crackers, reformers, hydrotreaters, heat exchangers, pumps, and valves.

7. Storage: Stores crude oil, intermediate streams, and refined products before further processing or distribution.

8. Tanker trucks and ships: Transport refined petroleum products from storage facilities to distribution points and end users.



Durlon® Product List

1. SWGs, Durtec®, ETG, Kammprofile
2. SWGs, Durtec®, ETG, Kammprofile
3. 8300, 8500, 9000, Durtec®
4. 8300, 8500, 8900, 9000, 9002, 9200, ETG, Durtec®, SWG, Kammprofile, FGL316
5. 8500, 9000, 9002
6. 8300, 8500, 8900, 9000, 9002, 9200, Durtec®, SWG, Kammprofile, FGL316
7. 8500, 9000, SWG
8. 8500, 9000, 9002, FGS95



The core of the Durlon® brand is to provide fluid sealing solutions that make sense, both financially and strategically. We accomplish this through process-oriented design, sector-specific knowledge, and extensive testing. Our goal is to ensure performance and safety while operating under a quality management system registered to ISO 9001:2015.

At Durlon®, we offer specially developed sealing solutions tailored to your specific needs.

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