DURLON®
SEALING SOLUTIONS



www.durlon.com
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SEALING SOLUTIONS FOR
Mining



We succeed
when you succeed.

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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 **Mining**

A wide variety of minerals, ores, and other geological resources are mined today, each with unique properties and uses. Some of the most commonly mined materials include:

Coal: A fossil fuel that is primarily used for energy generation. Coal is one of the most abundant fossil fuels and is used to generate electricity, heat buildings, and power industrial processes. It is mined using a variety of methods, including underground mining, surface mining, and mountain-top removal mining.

Iron Ore: A key raw material in steel production and is used in construction, infrastructure, and transportation. Iron ore is typically extracted from open-pit or underground mines and is then processed to remove impurities and create iron ore pellets that are used in steel production.

Copper: mined from open-pit or underground mines and is then processed to remove impurities. It is used in a wide range of applications, including electrical wiring, plumbing, and electronics. Copper is also used in the construction industry, as well as in renewable energy technologies such as wind turbines.

Gold: Used in jewellery, investment, and as a currency. Gold is a highly sought-after precious metal. It is mined from underground mines or through placer mining, which involves the use of water and gravity to extract gold from sediment. Gold is also used in a range of electronic applications, including cell phones and computers.

Silver: Used in jewellery, silverware, and electrical applications. Silver is a precious metal that is mined from underground mines or through by-product mining, which involves the extraction of silver from other minerals, such as copper or lead.

Aluminum: Produced primarily from bauxite ore. Bauxite is mined and refined to produce alumina, which is then processed to produce aluminum metal. Aluminum is widely used in construction, transportation, packaging, and other applications because of its low density, corrosion resistance, and useful mechanical properties.

Zinc: mined from underground mines or through by-product mining, and is used in a wide range of applications, including galvanizing steel to prevent corrosion and in the production of batteries.

Nickel: extracted using surface or underground mining methods and is used in the production of stainless steel, which is used in a range of applications, including appliances and construction. Nickel is also used in the production of batteries for electric vehicles.

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Lithium: a light alkali metal commonly extracted from brine or hard rock deposits. It is widely used in the production of lithium-ion batteries, which are used in a range of applications, including electric vehicles and renewable energy storage.

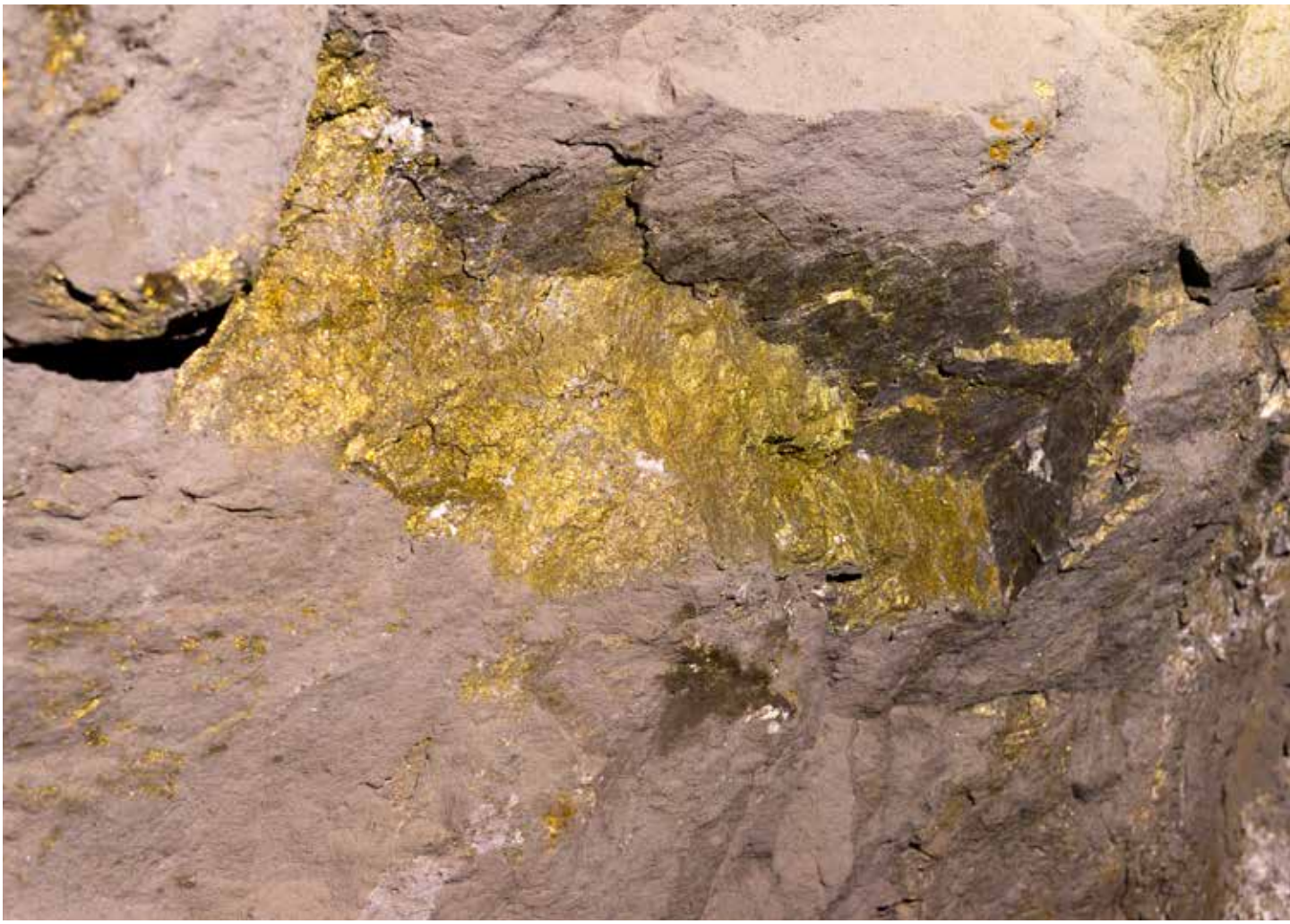
Rare Earth Elements (REEs): Used in a range of technologies, including smart phones, wind turbines, and electric vehicles. REEs are a group of 17 chemical elements that are typically mined from ore deposits.

Uranium: typically extracted from underground mines and is used as fuel for nuclear power plants. Nuclear power is a low-carbon energy source that produces electricity without emitting greenhouse gases.

Phosphate Rock: is mined from underground deposits using large machines that extract the mineral from the earth. It is processed to concentrate phosphate minerals, which are used primarily in the manufacture of phosphate fertilizers and other phosphorus-containing products.

Diamonds: Diamond mining is the process of extracting diamonds from the Earth's crust. Diamonds are formed deep in the Earth's mantle under intense heat and pressure. Diamond deposits may be mined using open-pit, underground, alluvial, or marine recovery methods, depending on the deposit.

Titanium: a hard, strong, and lightweight metal that is widely used in a range of industries, including aerospace, medical implants, and defense. Titanium is produced from titanium-bearing minerals such as ilmenite and rutile, which are recovered from mineral-sand and hard-rock deposits.





Innovative products
Unparalleled service

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Durlon® ETG

Extreme Temperature Gaskets SWG/Durtec®/Kammprofile

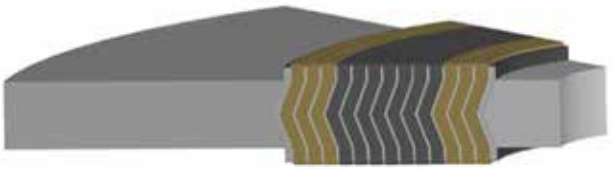
The Durlon® ETG's design is the sealing industry's current best available technology for effectively sealing extreme temperature applications.

Durlon® Extreme Temperature Gaskets (ETG) have been engineered to provide the pre-eminent solution to sealing gasketed joints having exposure to high temperatures, typically greater than 650°C (1,200°F) and up to 1,000°C (1,832°F). At elevated temperatures, maintaining sufficient bolt load and gasket seating stress is critical to preserving sealing integrity. Durlon® ETG combines an oxidation boundary material with the excellent stability and sealing characteristics of flexible graphite in order to preserve seal integrity and retain the initial assembly torque.

Durlon® ETG's engineered design principle is focused around providing oxidation protection zones around the central oxidation inhibited flexible graphite sealing component. Standard industrial grade flexible graphite typically begins to rapidly oxidize at around 650°C (1,200°F). By adding oxidation inhibitors to the graphite, the rate and amount of oxidation can be significantly reduced, thus extending the seal life of the material. However, oxidation can still occur and at extreme temperatures, it can reduce gasket mass and compromise sealing integrity.

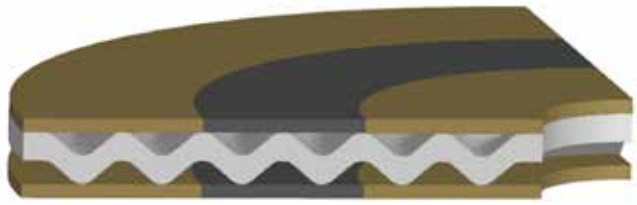
Durlon® ETG adds an inner and outer protection boundary in the form of a mica-phyllosilicate based sealing material called Durlon® HT1000® which consists of phlogopite mica paper impregnated with an inorganic binder at less than half the binder amount found in a typical vermiculite-phyllosilicate filled product. This lower binder content allows for superior weight retention and results in ultimate extreme temperature sealing performance.

DRI-ETG SWG



Certifications DRI-ETG SWG	
Fire Test	API 6FB, Fourth Edition 2019, Type 1 (Onshore Test)
Fire Test	API 6FB, Fourth Edition 2019, Type 2 (Offshore Test)
Fire Test	API 607, 4th edition with Exxon modifications

Durtec® ETG



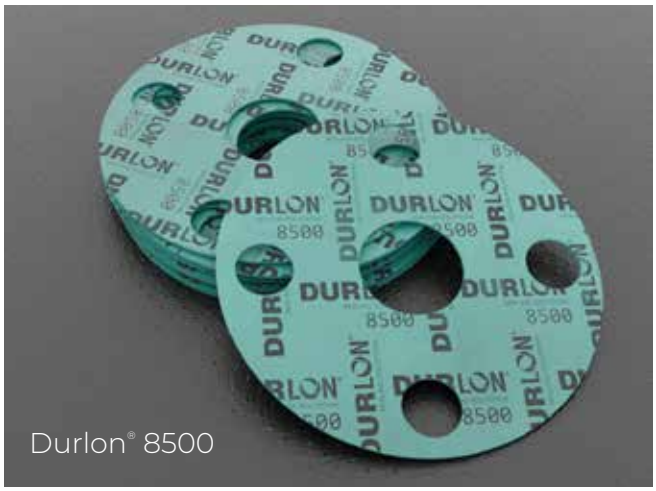
K40-ETG Kammprofile



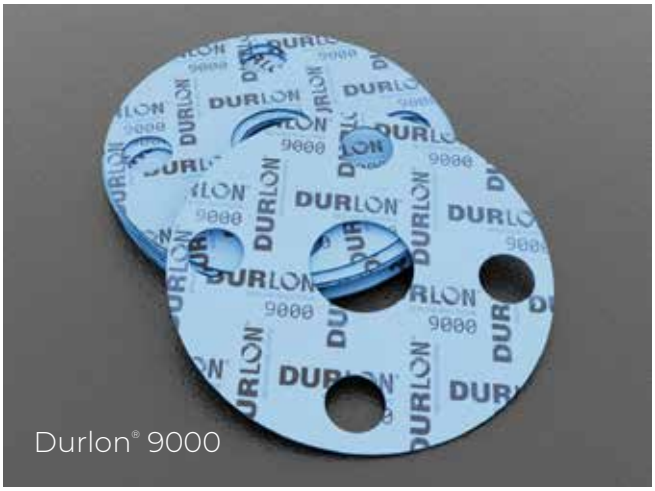
Durlon® Product Recommendations



Durlon® 8400



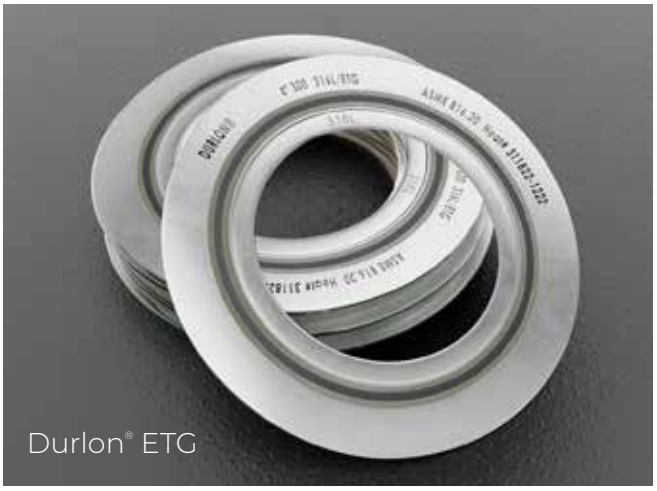
Durlon® 8500



Durlon® 9000



Durlon® SWG DRI


Durlon® ETG



Durlon® HT1000®

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Physical Properties & Certifications

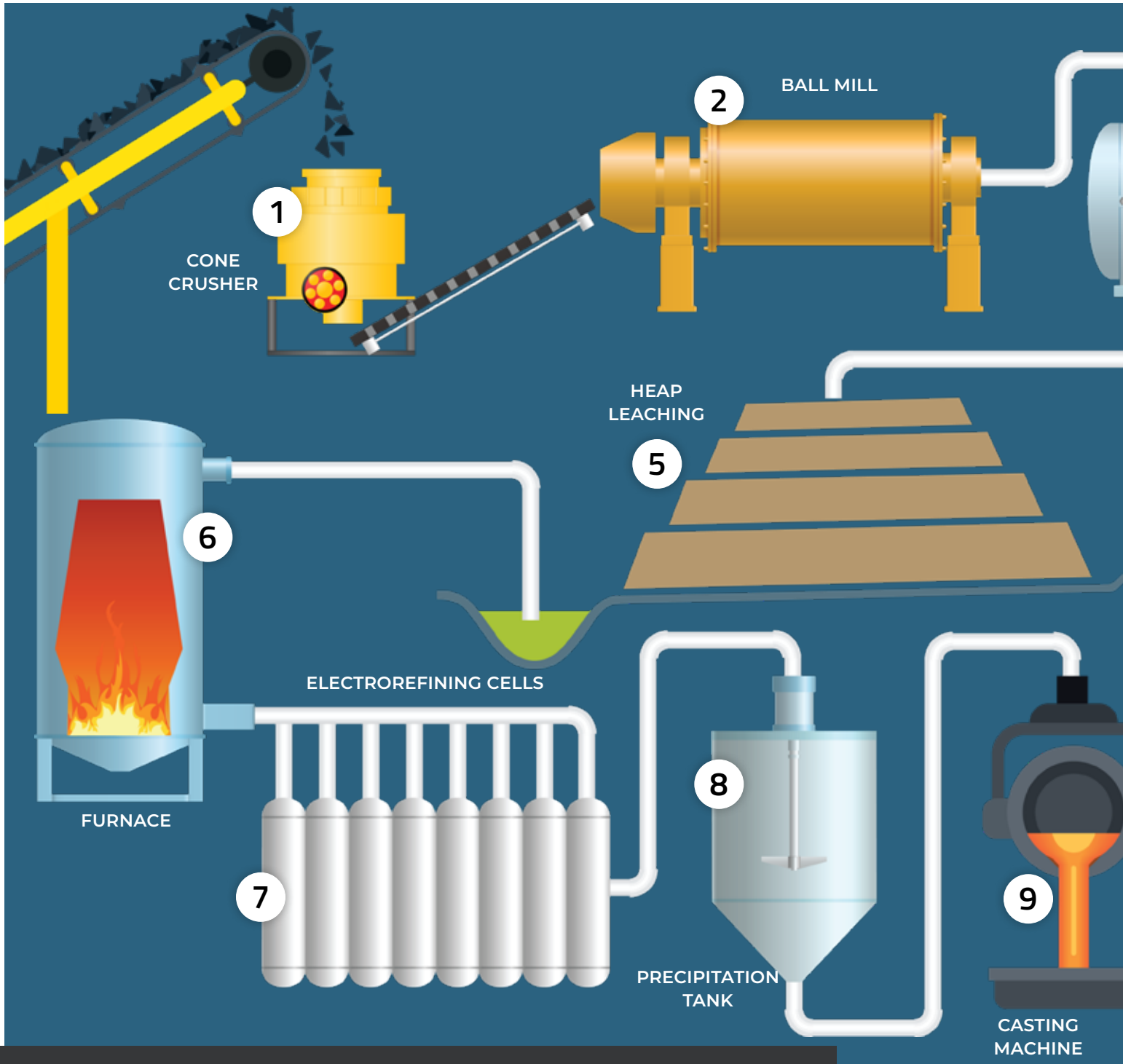
Physical Properties	8400	8500	9000	SWG	ETG	HT1000®
Composition	Phenolic NBR	Aramid -Inorganic NBR	Inorganic Filler / Pure PTFE Resins	Spiral Wound Gasket	Extreme Temperature Gasket	Phlogopite Mica, 90% min. / Silicone
Color	Gold	Green	Blue	Style: DRI	SWG / Durtec® / Kammprofile	Metallic Green-Gold
Temperature: Min Max Continuous, Max	 -40°C (-40°F) 427°C (800°F) 290°C (554°F)	 -40°C (-40°F) 371°C (700°F) 287°C (548°F)	 -212°C (-350°F) 271°C (520°F) 260°C (500°F)	-	> 650°C (1,200°F) up to 1,000°C (1,832°F)	 -55°C (-67°F) 1,000°C (1,832°F) -
Pressure, max, bar (psi)	103 (1,500)	103 (1,500)	103 (1,500)	-	-	Style S90 5 (73) Styles L316/T316 40 (580)
Density, g/cm³ (lb/ft³)	1.7 (106)	1.7 (106)	2.2 (138)	-	-	1.9 (119)
Compressibility, %	8–16	8–16	8–16	-	-	18–25
Recovery, %	50	50	40	-	-	39-43
Creep Relaxation, %	25	20	30	-	-	-
Tensile Strength, MPa (psi)	12.4 (1,800)	13.8 (2,000)	13.8 (2,000)	-	-	20 (2,900)
Sealability ASTM F2378 (Nitrogen)	 0.03 mL/min	 0.03 mL/min	 0.01 mL/min	-	-	-

Durlon® SWG - All Durlon® SWGs 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 Specification 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.

Style	Certifications
8400	California Proposition 65, RoHS and REACH Declaration.
8500	California Proposition 65 and RoHS and REACH Declaration compliant, API 6FB Fire Test with avg. temperature >650°C, 30 minutes, 40 bar, 1 mL/(in·min) max allowable leakage, Conforms to the FDA requirements of 21 CFR 177.2600, ABS Tier 2 - PDA Issued.
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 approved and listed in Chlorine Institute Pamphlet 95, (EC) 1935/2004 & EU (10/2011) approved material.
SWG	TA-Luft (VDI Guideline 2440), API Standard 6FB Fire Test- 6 inch 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
HT1000®	API 607, 4th edition Fire Test with Exxon modifications

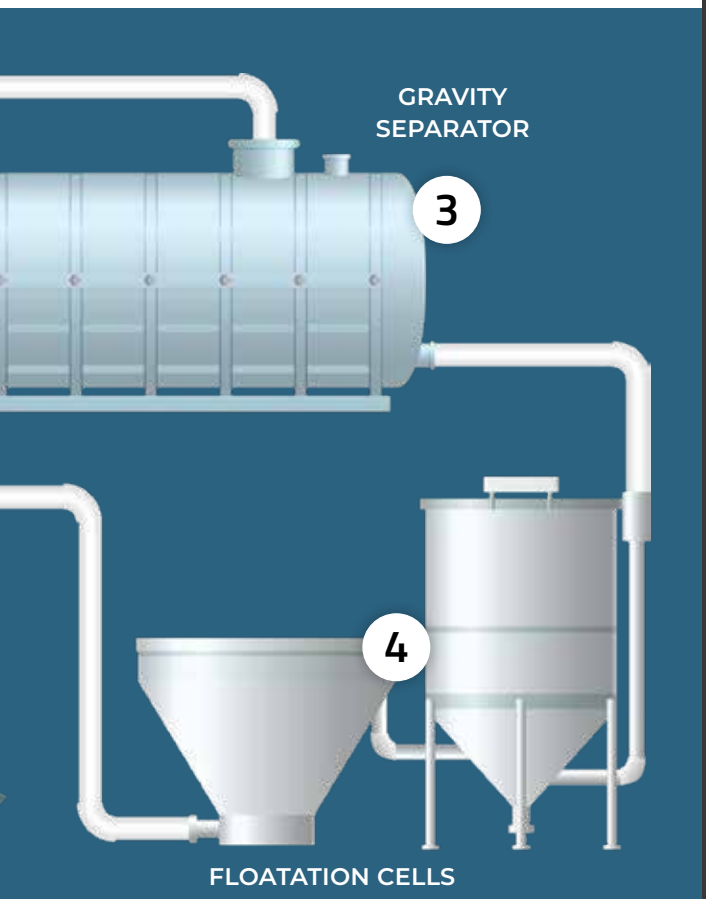
Note: ASTM properties are based on 1/16" sheet thickness, except ASTM F38 which is based on 1/32" sheet thickness. This is a general guide only and should not be the sole means of accepting or rejecting this material. The data listed here falls within the normal range of product properties, but should 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.

Gold Production Process Flow Diagram



NOTE: This is a simplified graphical representation of a gold-production process showing selected major processing stages. Actual gold-processing flowsheets vary depending on ore mineralogy, gold occurrence, recovery method, and plant design. The diagram does not show every unit operation or process detail; rather, it illustrates representative equipment and process stages that may be used in gold recovery and refining.

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Durlon® Product List

1. 8400, 8500, 8600
2. 8400, 8500, SWG
3. 8400, 8500, 9000, SWG
4. 8400, 8500, 9000, SWG
5. 9000, 9200, FGL316, SWG, ETG
6. 8300, 8900, 9000, ETG, Durtec® Kammprofile, CFG
7. 9000, SWG, ETG
8. 8400, 8500, 9000, SWG
9. Durtec® , ETG, HT1000

The detailed flow process of gold production :

EXPLORATION AND MINING
Gold deposits are identified through exploration and evaluation. Economically viable ore is then extracted using open-pit or underground mining methods.

CRUSHING AND GRINDING
Ore is reduced in size to liberate gold-bearing minerals and prepare it for recovery.

1. CONE CRUSHER
Reduces mined ore to a smaller particle size.
2. BALL MILL
Grinds crushed ore to improve mineral liberation.

CONCENTRATION AND LEACHING
Depending on the ore, gravity separation, flotation, and leaching may be used individually or in combination.

3. GRAVITY SEPARATOR
Concentrates dense gold-bearing particles from lighter material.
4. FLOTATION CELLS
Use reagents and air bubbles to separate valuable minerals from unwanted material.
5. HEAP LEACHING
Uses a leaching solution to recover gold from suitable ore placed on engineered leach pads.

RECOVERY AND REFINING
Recovered gold-bearing material is processed and refined according to the selected recovery method.

6. FURNACE
Used to smelt recovered gold-bearing material or concentrate for further refining.
7. ELECTRO-REFINING CELLS
Use electrical current to further purify gold.
8. PRECIPITATION TANKS
Used to recover dissolved gold from solution by precipitation.

PRODUCTION OF GOLD BULLION
Refined gold is prepared for final casting.

9. CASTING MACHINE
Casts refined gold into bars or other specified forms.



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 adhering to the quality management system registered to ISO 9001:2015.

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

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