DURLON®
SEALING SOLUTIONS

www.durlon.com
info@durlon.com

SEALING SOLUTIONS FOR
Mining

We Succeed
When you Succeed.

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 through the stress of everyday use, or specialized applications and high-temperature environments, liquid or gas, our products deliver sustainable integrity.

At Durlon, we succeed when you succeed.

DURLON®
SEALING SOLUTIONS

Sealing Solutions for **Mining**

There are a vast number of minerals that are mined today, each with their unique properties and uses. Here are some of the most commonly mined minerals:

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 mountaintop removal mining.

Iron Ore: A key ingredient 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 for 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 for jewellery, silverware, and photography. 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: mined from bauxite ore and is processed to create aluminum ingots that are used in a range of applications, including construction, transportation, and packaging. It is prized for its lightweight and durable 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: is typically extracted from underground mines 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.

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

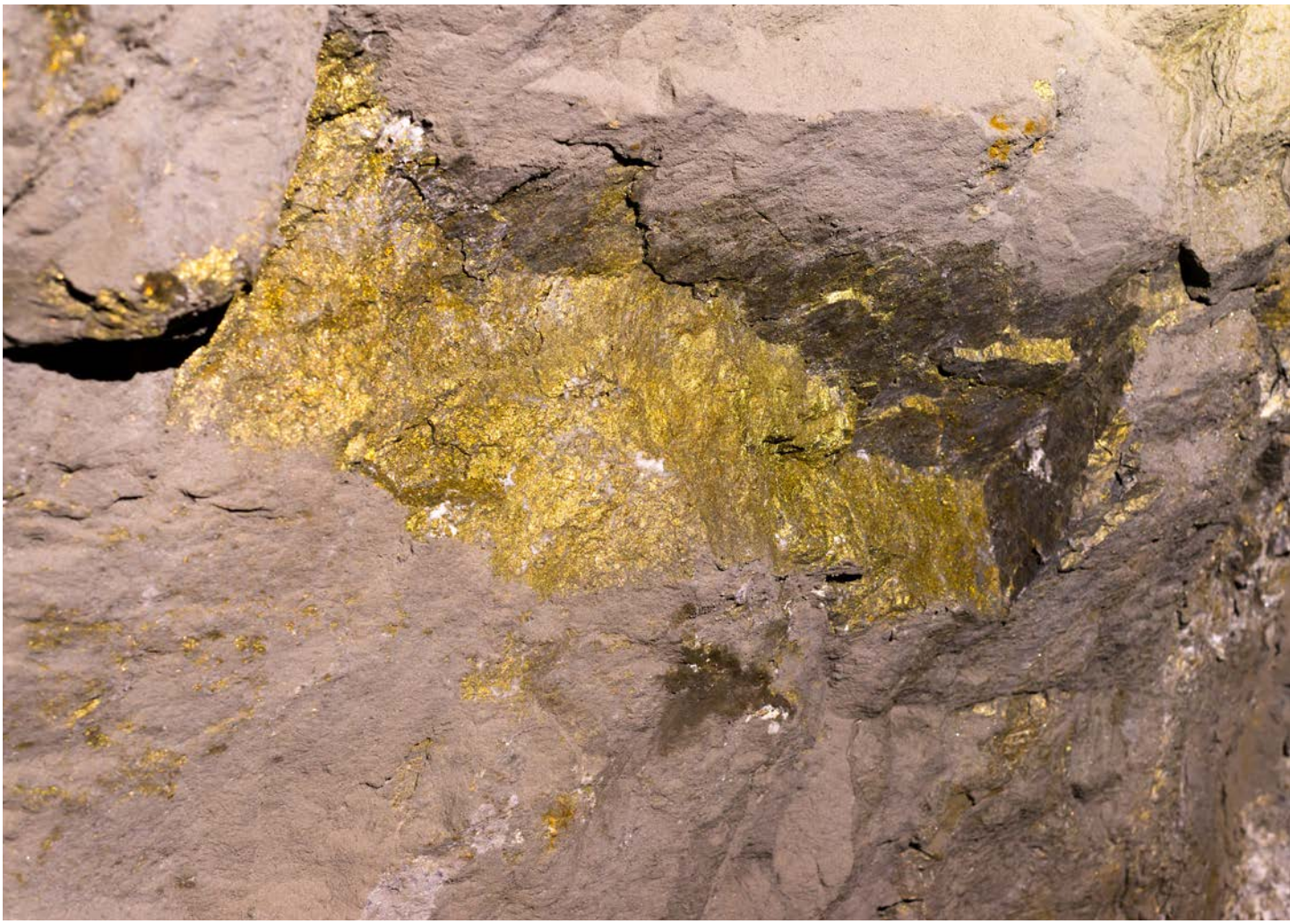
Rare Earth Elements (REEs): Used in a range of technologies, including smart phones, wind turbines, and electric vehicles. REEs are a group of 17 metals that are typically mined from ore deposits.

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.

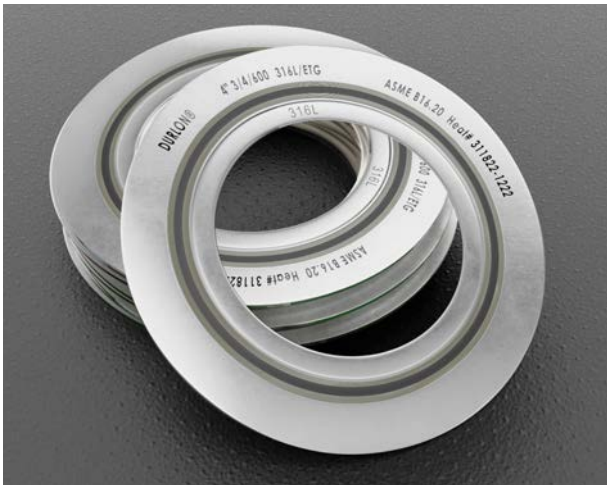
Phosphate Rock: is mined from underground deposits using large machines that extract the mineral from the earth. The potash is then processed to remove impurities and refine it into pure potash, primarily used in fertilizers (approximately 95%) to support plant growth, increase crop yield and disease resistance, and enhance water preservation.

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. The primary method of diamond mining is through open-pit or underground mining.

Titanium: a hard, strong, and lightweight metal that is widely used in a range of industries, including aerospace, medical implants, and defense. The primary method of titanium mining is through open-pit or underground mining.



Innovative products
Unparalleled service



Durlon® ETG

Extreme Temperature Gaskets SWG/Durtec®/Kammprofile

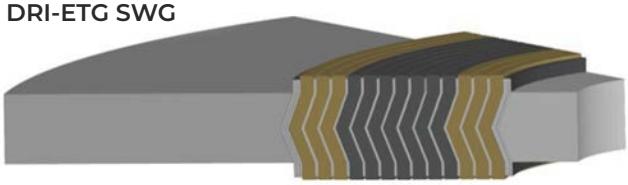
The Durlon® ETG's design is the sealing industry's current best available technology for effectively sealing extreme temperature applications.

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 extreme temperatures, flange assembly torque retention is the key component to maintaining a tight seal. 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.

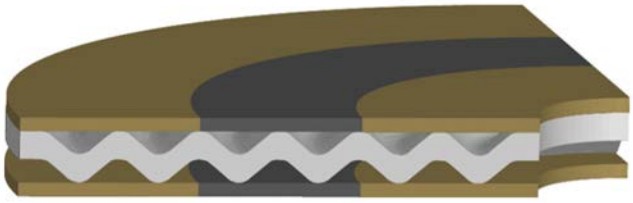
Durlon® ETG's engineered design principle is focused around providing oxidation protection zones around the central oxidation inhibited flexible graphite sealing component. Standard industrial grade flexible graphite typically begins to rapidly oxidize at around 650°C (1,200°F). By adding oxidation inhibitors 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 be fatal to the integrity of the joint.

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.

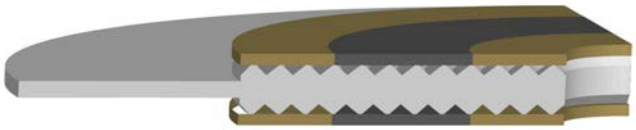
DRI-ETG SWG



Durtec® ETG



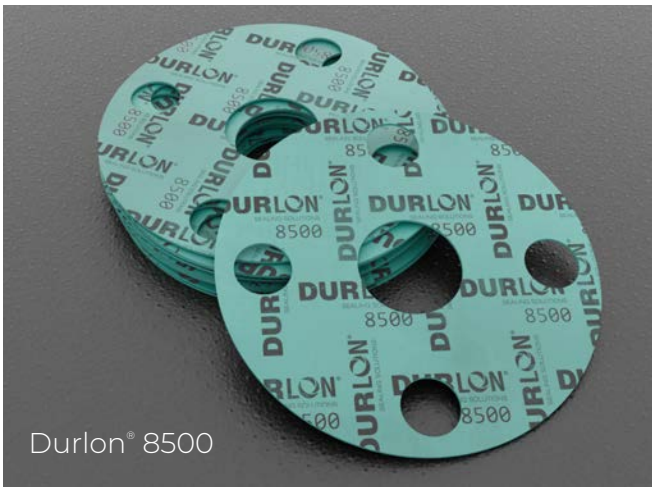
K40-ETG Kammprofile



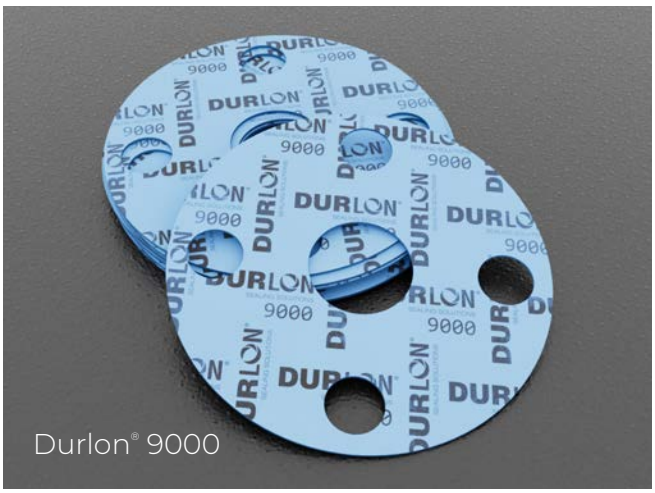
Certifications	
Fire Test	API 607, 4th edition with Exxon modifications

Durlon® Product Recommendations

Durlon® 8400

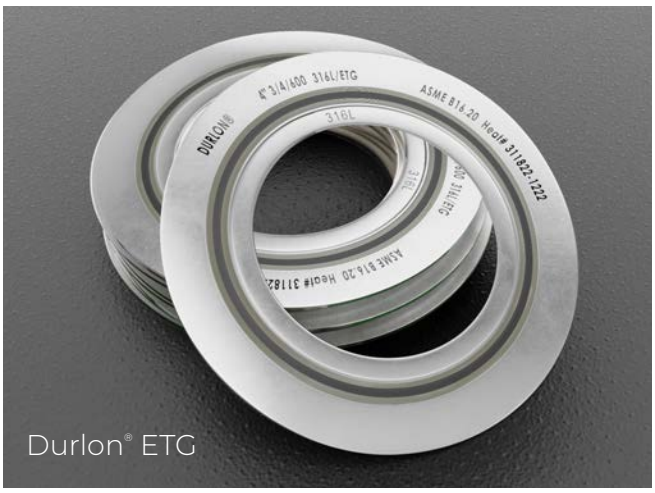


Durlon® 8500



Durlon® 9000

Durlon® SWG DRI



Durlon® ETG

Durlon® HT1000®

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	 -73°C (-100°F) 427°C (800°F) 290°C (554°F)	 -73°C (-100°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/cc (lbs/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	-	-	40 (5,800)
Tensile Strength, MPa (psi)	12.4 (1,800)	13.8 (2,000)	13.8 (2,000)	-	-	20 (2,900)
Sealability ASTM 2378 (Nitrogen)	0.03 cc/min	0.03 cc/min	0.01 cc/min	-	-	-

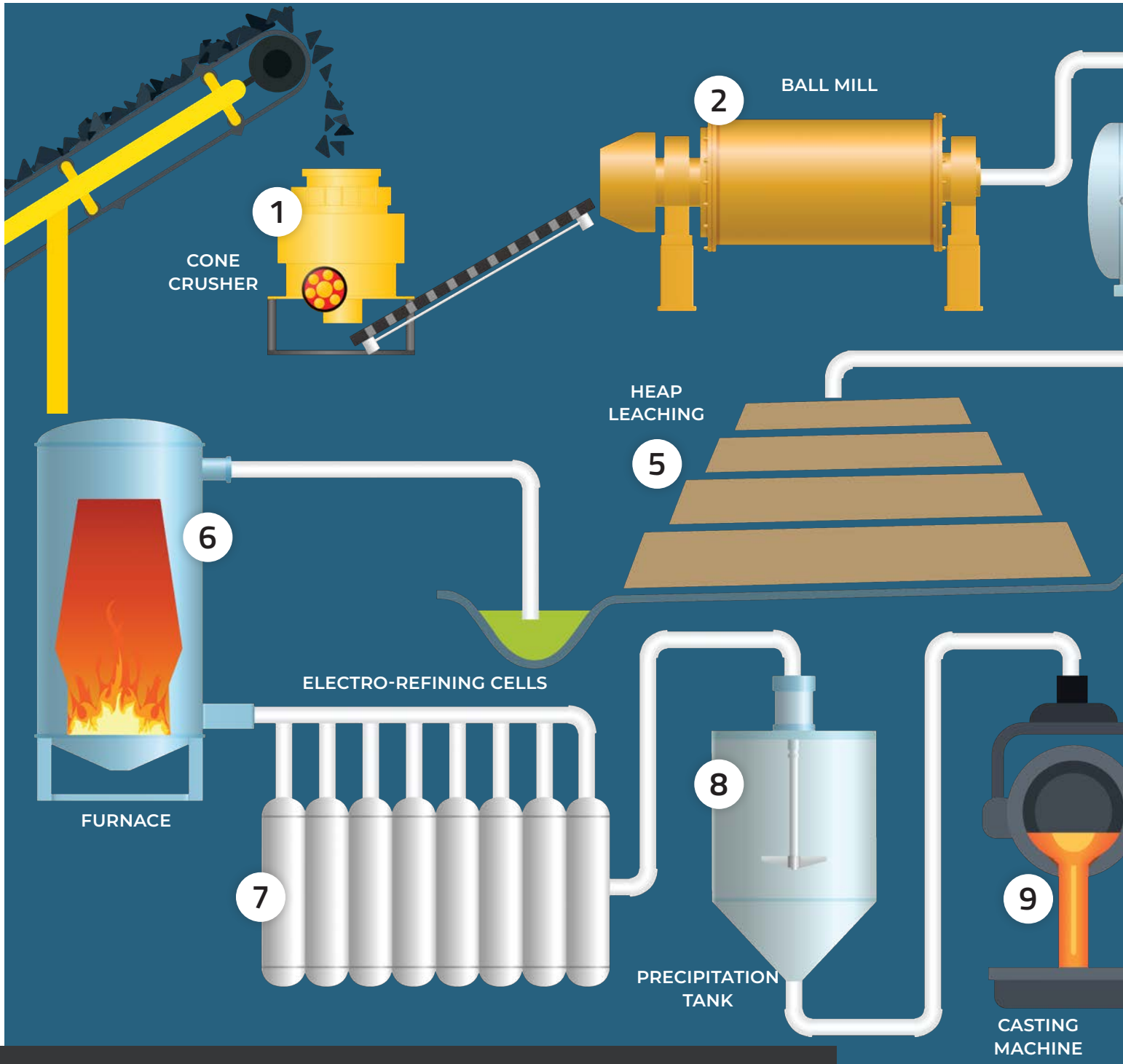
Durlon® SWG - All Durlon® SWG's are manufactured according to ASME B16.20 standards. Quality Assurance complies with API Specifications Q1 and ISO 9001 standards. Super Inhibited Graphite meets the requirements of Shell Specification MESC SPE 85/203 and meets PVRC SCR Flexible Graphite Spec for FG 600 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.

Style	Certifications
8400	California Proposition 65, RoHS Reach Declaration.
8500	California Proposition 65, RoHS Reach Declaration, API 6FB Fire Test with avg. temperature >650°C, 30 minutes, 40 bar, 1 ml (inch/min.) max allowable leakage, Conforms to the FDA requirements of 21 CFR 177.2600
9000	RoHS Reach Declaration, ANSI/API 607 Fire Test 6th edition, Zero leakage (The test fixture was subjected to an external flame of 875°C (1607°F) average for 30 minutes. The measured leakage was 1.8 ml/min, where the max allowable limit is 1200ml/sec.), Approved material for WRAS (Water Regulations Advisory Scheme), USP Class VI 121°C (250°F) for 30 min., TA-luft (VDI Guideline 2440), ABS-PDA & Pamphlet 95, the chlorine institute, DNV-GL, (EC) 1935/2004 & EU (10/2011), and conforms to FDA requirements of 21 CFR 177.1550 for food and drug contact.
SWG	TA-luft (VDI Guideline 2440), API Standard 6FB Fire Test- 6 inch Class 300 SWG FG
ETG	API 607, 4th edition Fire Test with Exxon modifications
HT1000®	API 607, 4th edition Fire Test with Exxon modifications

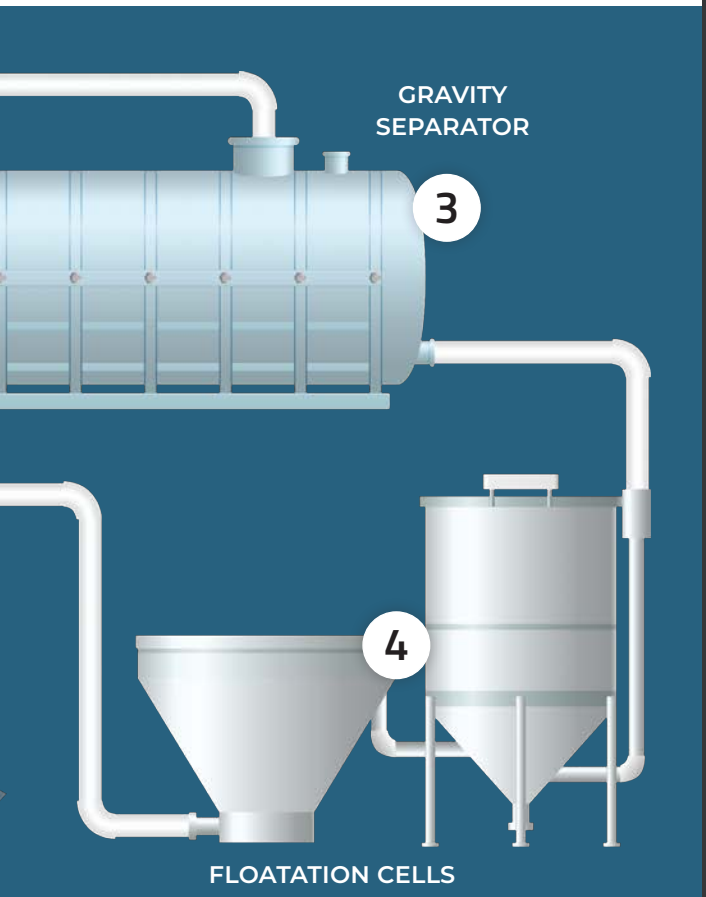
Durlon® 9000 is made with Teflon™ fluoropolymer. Teflon™ is a trademark of The Chemours Company FC, LLC used under license by Triangle Fluid Controls Ltd.

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 specifications 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 graphical representation of a gold production process, showing the primary process flow path. It does not show the minor details of the process, rather it focuses on the equipment used, and other instruments that are present. It helps to illustrate how the major components of this type of process plant interacts with each other to bring about the desired effect.



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
The first step in gold production is to explore and mine for gold.

CRUSHING AND GRINDING
After the ore is extracted from the ground, it is crushed and ground into small particles. This is done to increase the surface area of the ore, which makes it easier to extract the gold.

1. CONE CRUSHER
Used to reduce the size of the ore particles.
2. BALL MILL
Used to grind the ore particles into a fine powder.

CONCENTRATION AND LEACHING
Once the ore is ground into a fine powder, it is then concentrated using a variety of techniques. This involves separating the gold from other minerals and impurities in the ore.

3. GRAVITY SEPARATOR
These separate the heavier ore particles from the lighter ones.
4. FLOTATION CELLS
These separate the gold particles from other minerals using chemical agents.
5. HEAP LEACHING
Used to extract the gold from the ore using chemical agents.

REFINING
After the gold has been extracted from the ore, it is then refined to remove any impurities.

6. FURNACE
Used to melt the gold ore.
7. ELECTRO-REFINING CELLS
Purify the gold using an electric current.
8. PRECIPITATION TANKS
Used to separate the gold from other impurities.

PRODUCTION OF GOLD BULLION
Once the gold has been refined, it is then cast into bars or ingots.

9. CASTING MACHINE
Used to cast the gold into bars or ingots.

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.

DURLON®
SEALING SOLUTIONS

www.durlon.com • info@durlon.com