



Durlon<sup>®</sup> iGuard<sup>™</sup> flange Isolation and sealing systems consist of all the necessary components to seal and electrically isolate between flanges, from general service to severe service applications. Gaskets are available in Raised Face (Type F), Full Face (Type E) and RTJ (Type D) flanges from NPS 1/2" (DN15) to NPS 144" (DN 3600) or equivalent, to meet all international piping sizes. iGuard<sup>™</sup> gaskets meet AWWA, ANSI, API, DN, JIS and all other dimensional standards. The standard iGuard<sup>™</sup> kit consists of a gasket, isolating washers and isolating bolt/stud sleeves. The gasket/carrier can be constructed of plain phenolic, neo-face phenolic, epoxy glass (G-3, G-10 or G-11), epoxy glass (G-10) bonded to 316SS core, Durlon<sup>®</sup> 8400, Durlon<sup>®</sup> 8500 or even Durlon<sup>®</sup> 9000. In gaskets with phenolic or glass carrier rings, the double-ogee sealing element provides a reliable concentrated unit load on the flanges using the lowest torquing conditions possible. For other styles, a spring energized PTFE sealing element is used.

Carrier	Sealing Element			
	Nitrile	EPDM	Viton	PTFE
Plain Phenolic	✓	✓	✓	✓
Neo-Faced Phenolic G-3	✓	✓	✓	✓
Silicone Glass G-7	✓	✓	✓	✓
Epoxy Glass G-10	✓	✓	✓	✓
Epoxy Glass G-11	✓	✓	✓	✓
Durlon <sup>®</sup> 8400	n/a	n/a	n/a	n/a
Durlon <sup>®</sup> 8500	n/a	n/a	n/a	n/a
Durlon <sup>®</sup> 9000	n/a	n/a	n/a	n/a

### Before Tightening

The flange faces make contact with the sealing elements which sit slightly higher than the isolating carrier ring.

### After Tightening

The sealing element is compressed and moves bi-laterally through the gasket radius thus filling the small gaps on either side of the sealing element. This radial movement provides a tighter seal with less stress on the carrier ring as compared to rectangular sealing elements used in other gasket styles in the market. The tri-directional movement of the sealing element provides better elastic recovery over time as bolt loads relax and pressure/temperature cycles occur.

### Applications

- Gas
- Waste Water
- Potable Water
- Steam
- Oil
- Chemicals (caustic, acid)
- Pipelines
- LNG

### Industries

- Oil & Gas
- Pulp & Water
- Petro Chemical
- Refining
- Water/Wastewater
- Food & Beverage
- Marine
- Aerospace
- LNG

### General Features

- Auto-Energizing double-ogee seal
- Low torque requirements
- Tri-directional seal movement for a tighter seal

ASTM	Test Method	Plain Phenolic	Neo-Faced Phenolic	Hi-Temp Phenolic G-3	Silicone Glass G-7	Epoxy Glass G-10	Epoxy Glass G-11
D149	Dielectric Strength, volts/Mil	500	500	550	350-400	550	550
D695	Compressive Strength, psi	25,000	25,000	50,000	40,000	50,000	50,000+
D229	Water Absorption, %	1.60	1.60	0.70	0.07	0.10	0.10
D257	Insulation Resistance, Meg/Ohms	40,000	40,000	46,000	2,500	200,000	200,000
D790	Flexural Strength, psi	22,500	22,500	60,000	27,000	60,000	75,000+
D785	Hardness Rockwell, "M"	85	85	115	105	115	115
D256	IZOD Impact Strength, Ft-Lbs/in.	1.2	1.2	12	8	14	12
D732	Shear Strength, psi	10,000	10,000	18,000	20,000	22,000	22,000
	Operating Temperature	-54°C to 104°C	-54°C to 79°C	-54°C to 200°C	Cryogenic to 232°C	Cryogenic to 138°C	Cryogenic to 180°C
		-65°F to 220°F	-65°C to 175°F	-65°C to 392°F	Cryogenic to 450°F	Cryogenic to 280°F	Cryogenic to 177°F

**iGuard™ EN**

The iGuard™ EN style isolation gasket is manufactured from Nema grad G-10/FR-4 glass epoxy material incorporating a Viton double-ogee sealing element. These kits come standard with one iGuard™ EN gasket, two isolating Nema grade G-10 washers and one Nema grade G-10 sleeve tube for every bolt/stud.

**iGuard™ HC**

The iGuard™ HC style isolation gasket is manufactured from special high-compression 6mm (1/4") thick Nema grade G-10 glass epoxy material incorporating a spring energized PTFE sealing element to prevent cold flow under high pressures. These kits come standard with one iGuard™ HC gasket, two isolating Nema grade G-10 washers, two SAE zinc plated steel backup washers, and one Nema grade G-10 sleeve tube for every bolt/stud.

**iGuard™ CS**

The iGuard™ CS style isolation gasket is manufactured from 3mm (1/8") thick Nema grade G-10 glass epoxy material bonded to a 316 stainless steel internal core with a spring energized PTFE sealing element to prevent cold flow in critical service applications under continuous reciprocation movement or internal pressure surges at elevated temperatures. This design makes the iGuard™ CS ideal for API Class 15,000 and ANSI Class 600, 900, and 2,500 flange applications. These kits come standard with one iGuard™ CS gasket, two isolating Nema grade G-10 washers, two SAE zinc plated steel backup washers, and one Nema grade G-10 sleeve tube for every bolt/stud.

**iGuard™ HT**

The iGuard™ HT style isolation gasket is manufactured from 6mm (1/4") thick Nema grade G-10 glass epoxy material incorporating a spring energized PTFE sealing element to prevent cold flow in critical service applications at high temperatures, under continuous reciprocating movement, with internal pressure surges, and requiring frequent removal and installation such as those found in offshore drilling platforms and natural gas compressors and pumping stations. This design makes the iGuard™ HT ideal for ANSI Class 150 to 2,500 and API Class 3,000 to 10,000 and comes in sizes from NPS 1/2" (DN 25) to NPS 24" (DN 600) or international equivalents in Type E (full face) or Type F (raised face) configurations. These kits come standard with one iGuard™ HT gasket, two isolating Nema grade G-10 washers, two SAE zinc plated steel backup washers, and one Nema grade G-10 sleeve tube for every bolt/stud.

**iGuard™ 8400**

The iGuard™ 8400 style isolation gasket is manufactured from 3mm (1/8") thick genuine Durlon® 8400 phenolic fiber gasket material to improve sealability in critical service chemical environments from pH 2-13 and other aggressive media to 232°C (450°F). This design makes the iGuard™ 8400 ideal for ANSI Class 150 and 300 and comes in sizes from NPS 1/2" (DN 25) to NPS 96" (DN 2400) or international equivalents in Type E (Full face) or Type F (raised face) configurations. These kits come standard with one iGuard™ 8400 gasket, two isolating Nema grade G-10 washers, two SAE zinc plated steel backup washers, and one Nema grade G-10 sleeve tube for every bolt/stud.

**iGuard™ 8500**

The iGuard™ 8500 style isolation gasket is manufactured from 3mm (1/8") thick genuine Durlon® 8500 aramid fiber gasket material to improve sealability in steam environments to 232°C (450°F). This design makes the iGuard™ 8500 ideal for ANSI Class 150 and 300 and comes in sizes from NPS 1/2" (DN 25) to NPS 96" (DN 2400) or international equivalents in Type E (Full face) or Type F (raised face) configurations. These kits come standard with one iGuard™ 8500 gasket, two isolating Nema grade G-10 washers, two SAE zinc plated steel backup washers, and one Nema grade G-10 sleeve tube for every bolt/stud.

**iGuard™ 9000**

The iGuard™ 9000 style isolation gasket is manufactured from 3mm (1/8") thick genuine Durlon® 9000 glass filled PTFE gasket material to improve sealability in critical service chemical environments from pH 0-14 and other aggressive media and from temperatures between -73°C(-100°F) to 232°C(450°F). This design makes the iGuard™ 9000 ideal for cryogenic, petrochemical, pharmaceutical, semiconductor manufacturing, and food and beverage manufacturing applications in ANSI Class 150 and 300 or international equivalents and comes in sizes from NPS 1/2" (DN 25) to NPS 144" (DN 3600) in Type E (Full face) or Type F (raised face) configurations. These kits come standard with one iGuard™ 9000 gasket, two isolating PTFE washers, two SAE zinc plated steel backup washers, and one PTFE sleeve tube for every bolt/stud.

## Isolation & Sealing Kits Recommended Application Chart

Service	Gasket	Seal	Sleeve	Washer	Temperature		Service	Gasket	Seal	Sleeve	Washer	Temperature	
					Low °C(°F)	High °C(°F)						Low °C(°F)	High °C(°F)
Acetone	Phenolic	EPDM	Mylar	Phenolic	0 (32)	27 (80)	Pentane	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Air	G10	Nitrile	Mylar	Phenolic	-40 (-40)	107 (225)	Propane	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Ammonia	G10	PTFE	Mylar	G10	-54 (-65)	104 (220)	Propylene	G10	Viton	G10	G10	0 (32)	27 (80)
Bleach	G10	PTFE	Mylar	G10	0 (32)	27 (100)	Sewage	G10	Viton	Mylar	G10	-29 (-20)	138 (280)
Carbon Dioxide	G10	Nitrile	Mylar	G10	0 (32)	28 (150)	Steam	-	-	-	-	-	-
Caustic Soda	ePTFE	-	ePTFE	ePTFE	-	-	Styrene	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Cryogenic	G10	PTFE	G10	G10	-184 (-300)	138 (280)	Sulphur (Molten)	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Ethanol	G10	EPDM	Mylar	G10	0 (32)	38 (100)	Toluene	G10	Viton	G10	G10	0 (32)	66 (150)
Ethylene	G10	PTFE	G10	G10	0 (32)	27 (80)	Toluene	Phenolic	Viton	Mylar	Phenolic	-40 (40)	104 (220)
Fuel Oil	G10	Viton	Mylar	G10	-29 (-20)	138 (280)	Water, HOT	G10	EPDM	Mylar	G10	79 (175)	138 (280)
Jet Fuel	G10	Viton	Mylar	G10	-29 (20)	107 (225)	Water, Potable	G10	EPDM	Mylar	Phenolic	0 (32)	138 (280)
Natural Gas	Phenolic	Nitrile	Mylar	Phenolic	-40 (-40)	104 (220)	Water, Sea	G10	EPDM	Mylar	Phenolic	0 (32)	138 (280)
Sour Gas	G10	Viton	Mylar	Phenolic	-29 (-20)	104 (220)	Sulfuric Acid	ePTFE	-	ePTFE	ePTFE	-	-
Gasoline	G10	PTFE	Mylar	G10	-54 (-65)	107 (225)	Sulfuric Acid <10%	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Unleaded Gasoline	Phenolic	Viton	Mylar	Phenolic	-40 (-40)	104 (220)	Nitric	ePTFE	-	ePTFE	ePTFE	-	-
Unleaded Gasoline	G10	Viton	Mylar	Phenolic	-29 (-20)	138 (280)	Nitric Acid <5%	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Hydrogen	G10	Nitrile	Mylar	G10	0 (32)	38 (100)	Citric Acid	ePTFE	-	ePTFE	ePTFE	-	-
Black Liquor	ePTFE	-	G10	G10	-	-	Hydrochloric Acid <10%	G10	PTFE	G10	G10	-184 (-300)	138 (280)
White Liquor	ePTFE	-	G10	G10	-	-	Hydrochloric Acid	ePTFE	-	ePTFE	ePTFE	-	-
Spent Liquor	ePTFE	-	G10	G10	-	-	Acetic Acid <10%	G10	PTFE	G10	G10	-184 (-300)	138 (280)
LNG	G11	PTFE	G10	G10	-184 (-300)	38 (100)	Phosphoric Acid <25%	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Mercaptan	G10	PTFE	G10	G10	-184 (-300)	138 (280)	Potassium Hydroxide	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Methanol	G10	PTFE	G10	G10	-184 (-300)	138 (280)	Ammonium Hydroxide	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Methyl Tertiary Butyl Ether	G10	PTFE	G10	G10	-184 (-300)	138 (280)	Trichloroethylene	Phenolic	Viton	Mylar	Phenolic	-40 (40)	104 (220)
Nitrogen	Phenolic	Nitrile	Mylar	Phenolic	-40 (-40)	104 (220)	Auto Transmission Fluid	G10	Viton	G10	G10	0 (32)	66 (150)
Crude Oil	G10	Viton	Mylar	G10	-29 (-20)	138 (280)	Auto Transmission Fluid	Phenolic	Viton	Mylar	Phenolic	-40 (-40)	104 (220)
Oxygen	ePTFE	-	G10	G10	-54 (-65)	121 (250)							

This information is a general guide for the selection of a suitable gasket material. The substances listed above are evaluated for their effect on gasket materials at ambient temperature -40°C (-40°F) to 38°C (100°F) unless stated otherwise. For unusual conditions of fluid concentration, internal pressures or temperature or applications not listed above, consult your local representative. This evaluation is based on laboratory or field tests or experience; however, no guarantee can be given as to the actual performance experienced by the end user. If you have questions regarding a specific application, please email: [tech@trianglefluid.com](mailto:tech@trianglefluid.com).