DURLON® iGuard™

Isolation & Sealing Kits
Styles: Type F, Type E, and Type D

Considering the environmental climate of today, it is more important than ever to prevent leakage in your piping systems. With flanges being the most common trouble area, proper sealing is key to preventing leakage. Durlon® offers quality products and materials which can help solve most flange sealing problems from eliminating leakage to preventing corrosion, and saving the integrity of the pipeline.

Our Durlon® iGuard™ flange Isolation & Sealing Kits are designed to be used on flanges and piping systems to create a dielectric break, which provides cathodic protection, assist in the prevention of corrosion and eventual break down of the metal, and isolate any current in the piping system from continuing down the line.

Gasket styles are available in Type F (Raised Face), Type E (Full Face) and Type D (RTJ) flanges from NPS ½" (DN15) to NPS 144" (DN 3600) or equivalent, to meet all international piping sizes. iGuard™ gaskets meet AWWA, ANSI, API, DN, JIS and all other dimensional standards.

GENERAL FEATURES

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

INDUSTRY APPLICATIONS:

- Oil & Gas
- Water/Wastewater
- Food & Beverage
- Marine
- Chemical Processing
- Pulp & Paper
- Petrochemical
- Mining

PACKAGING

Each Durlon® iGuard™ Flange Isolation & Sealing Kit is packaged individually in durable corrugated boxes. Isolating sleeves and washers are packaged separately and cushioned within the box to protect them from damage during shipment. Each set is clearly tagged with flange size, pressure rating, type or isolating sleeve and whether it is a single washer or double washer set.

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.

Type F (Raised Face Gasket)

The outside of the gasket fits inside of the flange bolt circle to ensure an exact positioning of the gasket.

Type E (Full Face Gasket)

This design facilitates proper alignment of the gasket during installation and prevents foreign material from shorting the flange isolation.

Type D (RTJ Gasket)

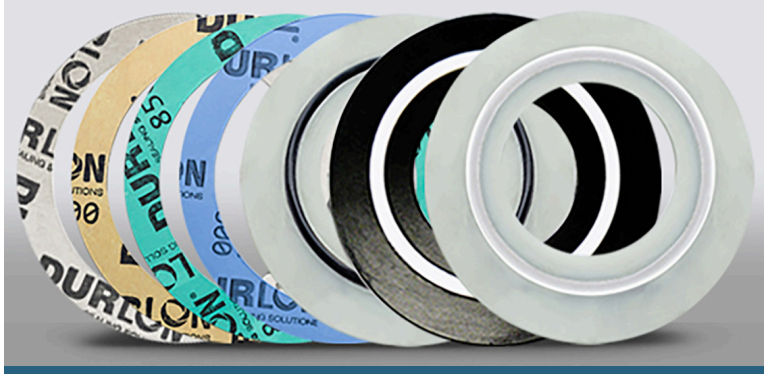
This design specifically fits into the ring groove of ring-type-joint flanges.

The Standard Kit

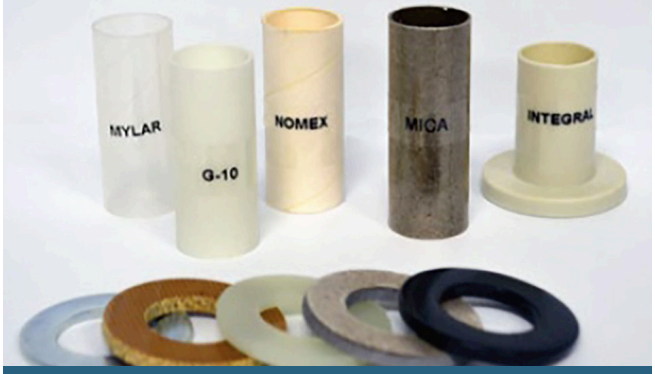
Consists of a gasket, isolating washers and isolating bolt/stud sleeves. The gasket carrier can be constructed of plain phenolic, neo-faced phenolic, epoxy glass (G-3, G-10 or G-11), epoxy glass (G-10) bonded to 316SS core, Durlon® 7910, 8400, 8500 or 9000.

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® 7910	✘	✘	✘	✘
Durlon® 8400	✘	✘	✘	✘
Durlon® 8500	✘	✘	✘	✘
Durlon® 9000	✘	✘	✘	✘

iGuard™ Kit Components



Gaskets Durlon® 7910, 8400, 8500, 9000, EN, CS, HC



Isolating Sleeves & Washers

iGuard™ 7910
The iGuard™ 7910 quality commercial grade compressed sheet gasket material is manufactured from aramid/inorganic fiber material. Maximum pressure class - 300# ANSI.

iGuard™ 8400
The iGuard™ 8400 style isolation gasket is manufactured from phenolic fiber material to improve sealability in critical service chemical environments from pH 2-13 and other aggressive media to 290°C (554°F). Maximum pressure class - 300# ANSI.

iGuard™ 8500
The iGuard™ 8500 style isolation gasket is manufactured from aramid fiber material to improve sealability in steam environments to 287°C (548°F). Maximum pressure class - 300# ANSI.

iGuard™ 7910, 8400 & 8500: These kits come standard with one 3mm (⅛") thick genuine iGuard™ 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. Maximum pressure class - 300# ANSI. These designs are ideal for ANSI Class 150 and 300 and come in sizes from NPS ½" (DN 25) to NPS 96" (DN 2400) or international equivalents in Type E (Full Face) or Type F (Raised Face) configurations.

iGuard™ 9000
The iGuard™ 9000 style isolation gasket is manufactured from 3mm (⅛") 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 to 260°C(500°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. Sizes available: from NPS ½" (DN 25) to NPS 144" (DN 3600) in Type E (Full Face) or Type F (Raised Face) configurations. This kit comes 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. Maximum pressure class - 300# ANSI.

iGuard™ EN
The iGuard™ EN style isolation gasket is manufactured from Nema grade G-10/FR-4 glass epoxy material incorporating a Viton double-ogee sealing element. This kit comes standard with one iGuard™ EN gasket, two isolating Nema grade G-10 washers, two SAE Zinc plated backup washer, and one Nema grade G-10 sleeve tube for every bolt/stud. Maximum pressure class - 2,500# ANSI, 10,000# API.

iGuard™ CS
The iGuard™ CS style isolation gasket is manufactured from 3mm (⅛") 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. This kit comes 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. Maximum pressure class - 2,500# ANSI, 15,000# API.

iGuard™ HC
The iGuard™ HC style isolation gasket is manufactured from special high-compression 6mm (¼") thick Nema grade G-10 glass epoxy material incorporating a spring energized PTFE sealing element to prevent cold flow under high pressures. This kit comes 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. Maximum pressure class - 2,500# ANSI, 10,000# API.

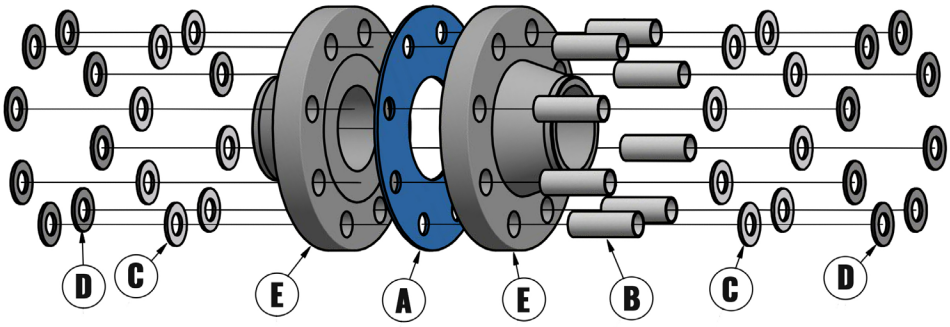
In gaskets with phenolic or glass carrier rings, the double-ogee sealing element provides a reliable concentrated unit load on the flanges, using the lowest torquing conditions possible. For other styles, a spring energized PTFE sealing element is used.

iGuard™ Material Physical Properties

ASTM Test Method	Properties	D7910	D8400	D8500	D9000	Mylar*	Plain Phenolic	Nitrile Phenolic	Virgin PTFE Teflon	Hi-Temp Phenolic G-3	Silicone Glass G-7	Epoxy Glass G-10	Epoxy Glass G-11	Critical Service CS
D149	Dielectric Strength, volts/Mil	279	371	297	406	400	500	500	285	550	350-400	550	550	488
D695	Compressive Strength, psi	-	-	-	-	-	25,000	25,000	3,500	50,000	40,000	50,000	50,000	80,000
D229	Water Absorption, %	-	-	-	-	-	1.60	1.60	<.01	0.70	0.07	0.10	0.10	0.08
D257	Insulation Resistance, MegOhms	-	3.1×10^{7}	4.2×10^{7}	0.1	-	40,000	40,000	$>10^{18}$	46,000	2,500	200,000	200,000	200,000
D790	Flexural Strength, psi	-	-	-	-	-	22,500	22,500	72,000	60,000	27,000	60,000	75,000	77,000
D256	IZOD Impact Strength, Ft-Lbs/in.	-	-	-	-	-	1.2	1.2	3.5	12	8	14	12	9.1
D229	Operating Temp °F	-100 to 500	-100 to 554	-100 to 548	-350 to 500	100 to 490	-65 to 250	-65 to 175	-350 to 500	-200 to 340	-200 to 430	Cryogenic to 284	Cryogenic to 356	Cryogenic to 500
	Operating Temp °C	-73 to 260	-73 to 290	-73 to 287	-212 to 260	-75 to 255	-54 to 104	-54 to 79	-212 to 260	-129 to 171	-129 to 221	Cryogenic to 140	Cryogenic to 180	Cryogenic to 260

Mylar: The Isolation Sleeve is designed to fit over the bolt diameter & through the flange bolt holes inner diameter. The sleeve extends through both flanges & centers on the isolation washer thickness. Isolation Sleeves have a standard wall thickness of .03125" (.79mm), diameter & length of the isolation sleeve is determined by each application.

iGuard™ Installation Procedures



Parts List		
Description	Item	Qty
Durlon® Gasket	A	1
PTFE Sleeves	B	8
Teflon Washers	C	16
316SS Washers	D	16
Flange	E	2

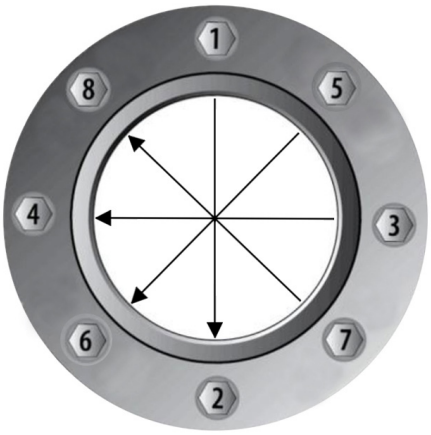
BEFORE TIGHTENING

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 bilaterally 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 or temperature cycles occur.

NOTE: Flanges are not included in the kit. Contact our Technical Department for more information about Installation, Bolt Torquing, the Star Patterns, and Load Values: tech@durlon.com



Star Pattern Diagram

iGuard™ Recommended Application Chart

Service	Gasket	Seal	Sleeve	Washer	Temperature Low °C(°F)	High °C(°F)
Acetone	Phenolic	EPDM	Mylar	Phenolic	0 (32)	27 (80)
Air	G10	Nitrile	Mylar	Phenolic	-40 (-40)	107 (225)
Ammonia	G10	PTFE	Mylar	G10	-54 (-65)	104 (220)
Bleach	G10	PTFE	Mylar	G10	0 (32)	27 (100)
Carbon Dioxide	G10	Nitrile	Mylar	G10	0 (32)	38 (100)
Caustic Soda	ePTFE	-	ePTFE	ePTFE	-	-
Cryogenic	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Ethanol	G10	EPDM	Mylar	G10	0 (32)	38 (100)
Ethylene	G10	PTFE	G10	G10	0 (32)	27 (80)
Fuel Oil	G10	Viton	Mylar	G10	-29 (-20)	138 (280)
Jet Fuel	G10	Viton	Mylar	G10	-29 (-20)	107 (225)
Natural Gas	Phenolic	Nitrile	Mylar	Phenolic	-40 (-40)	104 (220)
Sour Gas	G10	Viton	Mylar	Phenolic	-29 (-20)	104 (220)
Gasoline	G10	PTFE	Mylar	G10	-54 (-65)	107 (225)
Unleaded Gasoline	Phenolic	Viton	Mylar	Phenolic	-40 (-40)	104 (220)
Unleaded Gasoline	G10	Viton	Mylar	Phenolic	-29 (-20)	138 (280)
Hydrogen	G10	Nitrile	Mylar	G10	0 (32)	66 (150)
Black Liquor	ePTFE	-	G10	G10	-	-
White Liquor	ePTFE	-	G10	G10	-	-
Spent Liquor	ePTFE	-	G10	G10	-	-
LNG	G11	PTFE	G10	G10	-184 (-300)	38 (100)
Mercaptan	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Methanol	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Methyl Teriary Butyl Ether	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Nitrogen	Phenolic	Nitrile	Mylar	Phenolic	-40 (-40)	104 (220)
Crude Oil	G10	Viton	Mylar	G10	-29 (-20)	138 (280)
Oxygen	ePTFE	-	G10	G10	-54 (-65)	121 (250)

Service	Gasket	Seal	Sleeve	Washer	Temperature Low °C(°F)	High °C(°F)
Pentane	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Propane	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Propylene	G10	Viton	G10	G10	0 (32)	27 (80)
Sewage	G10	Viton	Mylar	G10	-29 (-20)	138 (280)
Steam	-	-	-	-	-	-
Styrene	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Sulfur (Molten)	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Tolulene	G10	Viton	G10	G10	0 (32)	66 (150)
Tolulene	Phenolic	Viton	Mylar	Phenolic	-40 (-40)	104 (220)
Water, HOT	G10	EPDM	Mylar	G10	79 (175)	138 (280)
Water, Potable	G10	EPDM	Mylar	Phenolic	0 (32)	138 (280)
Water, Sea	G10	EPDM	Mylar	Phenolic	0 (32)	138 (280)
Sulfuric Acid	ePTFE	-	ePTFE	ePTFE	-	-
Sulfuric Acid <10%	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Nitric Acid	ePTFE	-	ePTFE	ePTFE	-	-
Nitric Acid <5%	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Citric Acid	ePTFE	-	ePTFE	ePTFE	-	-
Hydrochloric Acid <10%	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Hydrochloric Acid	ePTFE	-	ePTFE	ePTFE	-	-
Acetic Acid <10%	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Phosphoric Acid <25%	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Potassium Hydroxide	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Ammonium Hydroxide	G10	PTFE	G10	G10	-184 (-300)	138 (280)
Trichloroethylene	Phenolic	Viton	Mylar	Phenolic	-40 (-40)	104 (220)
Auto Transmission Fluid	G10	Viton	G10	G10	0 (32)	66 (150)
Auto Transmission Fluid	Phenolic	Viton	Mylar	Phenolic	-40 (-40)	104 (220)

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.