

# FluoroSeal



## LINED BALL VALVES

**ANSI/ASME/PED  
PFA LINED CLASS 150  
MODEL TYPE BL2**

FluoroSeal® lined ball valves have straight-through flow providing positive shutoff with minimal pressure drop and flow turbulence. With the ball independent of the stem, the ball has some freedom to move along the axis of the valve in the closed position, while having no freedom to rotate against the stem. When line pressure is applied to the closed ball, it moves slightly downstream to maintain contact with the downstream seat where primary sealing occurs. Lined ball valves can generally be installed without regard for flow direction, and are ideally suited for automation as they feature an ISO mounting pad. FluoroSeal's standard fully PFA lined ball valve utilizes a ductile iron body housing with stainless steel ball and stem cores.

### All FluoroSeal® lined ball valves have the following features:

- **LOW EMISSION STEM SEAL\***

FluoroSeal lined ball valves exhibit very low fugitive emissions due to the use of fully adjustable, pre-compressed PTFE packing rings. Packing glands are factory set to provide years of trouble free service. Because of the floating ball design, induced side loading on the stem due to pressure drops across the valve are eliminated resulting in excellent stem sealing even after thousands of cycles.

\* Independent test data according to ISO 15848-1, show an average Fugitive Emission rate below 10 ppm.

- **FULL PORT DESIGN**

FluoroSeal lined ball valves are supplied with a straight through, full area, round port so there is no flow restriction. Because of the full port design end users can expect a high flow efficiency and low pressure drop when using this valve.

- **SUPERIOR SEAT DESIGN**

All FluoroSeal lined ball valves come standard with the self-compensating high performance GF2P seat. GF2P is a chemically modified second generation PTFE, which provides greater stability and long term bubble tight sealing even under the most severe operating conditions. Regardless of low or high pressure, the seat is designed to constantly ensure positive sealing with minimal operating torque.

- **LINING**

FluoroSeal lined ball valves are only molded with virgin, unpigmented PFA which allows the valve to be used in food service and other high purity applications. Because there is no liner pigmentation, there is no concern about product contamination from leaching colorants. The liner is securely locked to the valve body, ball, and stem via a series of investment cast locking grooves which eliminate liner collapse even under severe vacuum conditions.

- **ANTI BLOWOUT STEM**

The engineered stem design on the FluoroSeal fully lined ball valve prevents stem blow-out even if the packing gland/follower assembly is removed.



FluoroSeal Lined Ball Valve automated with a FluoroSeal Rack & Pinion Actuator

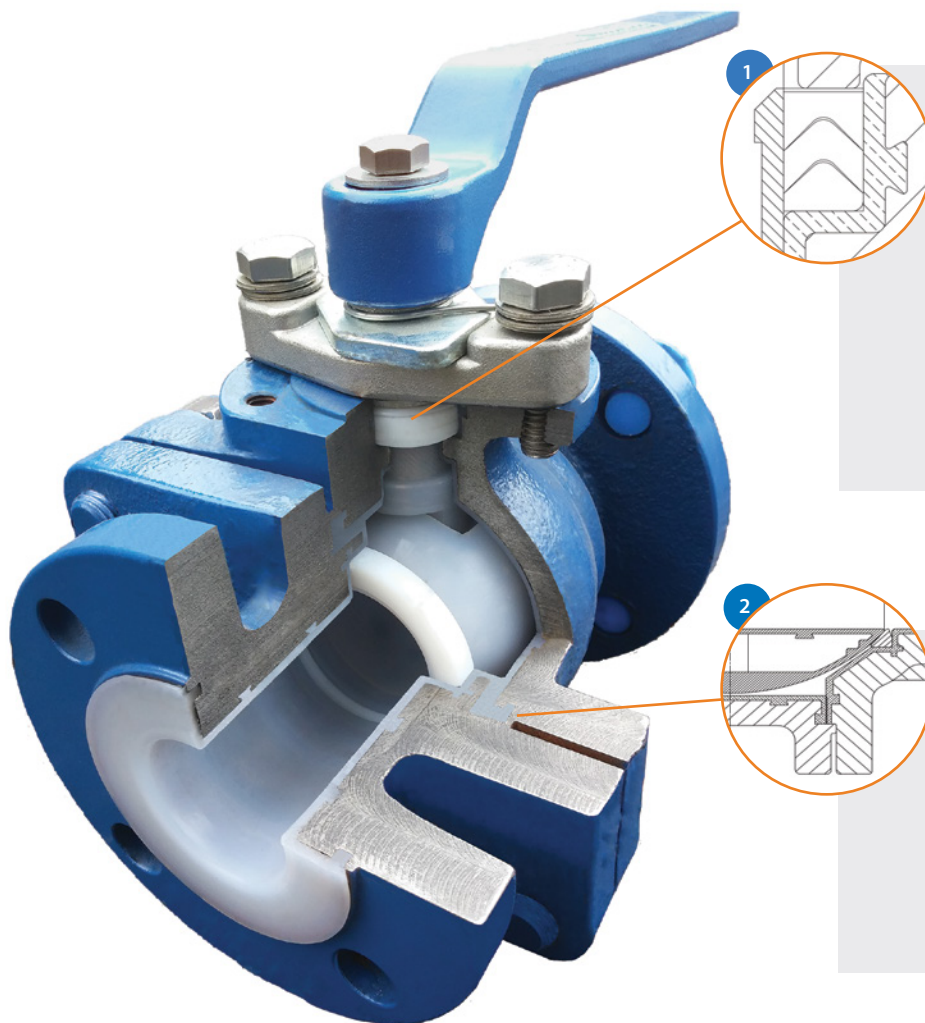
- **STANDARDIZED MOUNTING**

All FluoroSeal lined ball valves incorporate standard actuator mounting with dimensions per ISO 5211. This allows the use of standardized mounting kits which provides for a cost effective valve-actuation package.

- **ANTISTATIC DESIGN**

To prevent the build-up of a static charge electrical continuity between the valve stem and body is established via an anti-static spring.

### STANDARD LINED BALL VALVE - INTERNAL VIEW



#### Low Emission Packing Design

- Highly efficient low-friction, low emission sealing packing.
- Live loaded pressure energized V-shaped packing for superior performance in all applications including vacuum service.
- PTFE packing is compatible with most chemical applications.

#### Metal to Metal Contact Body Joint Design

- For strengthened body structure against externally induced forces.
- Encapsulated PFA joint prevents cold flow for optimum sealing; no need to adjust body bolts in thermal cycling applications.

### AVAILABILITY

- ASME Class 150
- Size Range: 1/2" to 6"
- Temperatures: -20°F to 400°F (-29°C to 204°C)
- Pressures: Vacuum to 250 psig

### DESIGN

- Valve Design: ASME B16.42
- Flanges: ASME B16.5 or B16.42
- Face to Face: ASME B16.10
- Pressure Testing: API 598 (Seat & Shell)

### OPTIONS

- Fully PFA Lined Stainless Steel Body
- Wrench Locking Device
- Full Factory Automation

### APPLICATIONS

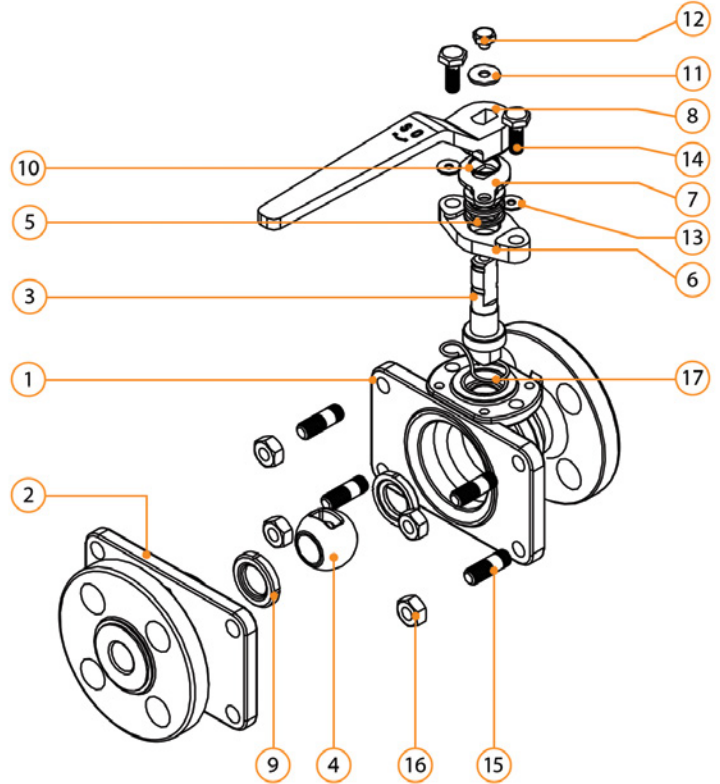
FluoroSeal fully PFA lined ball valves can be used in a wide range of corrosive applications where long term sealing and reliability are needed. Below is a partially listing of applications where FluoroSeal fully PFA lined ball valves have been successfully supplied.

- |                     |               |
|---------------------|---------------|
| • Hydrochloric Acid | • Acetic Acid |
| • Phosphoric Acid   | • Seawater    |
| • Nitric Acid       | • Chlorine    |
| • Sulfuric Acid     | • Bromine     |
| • Hydrofluoric Acid | • Brine       |

## STANDARD CONFIGURATION

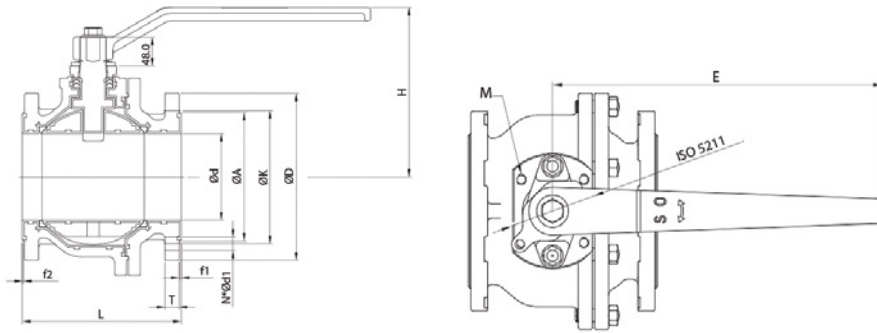
### LIST OF COMPONENTS

Item	Description	Material
1	Body	ASTM A395. Gr. 65-45-15 / PFA Lined
2	Cap	ASTM A395. Gr. 65-45-15 / PFA Lined
3	Stem	ASTM A276 304 / PFA Lined
4	Ball	ASTM A351. Gr. CF8 / PFA Lined
5	Gland Packing	PTFE
6	Gland Flange	ASTM A351 Gr.CF8
7	Triangle Stopper	ASTM A276 304
8	Handle	ASTM A216 WCB
9	Seat	GF2P
10	C-ring	ASTM A276 304
11	Washer	ASTM A276 304
12	Bolt	ASTM A193 Gr.B8 or A2-70
13	Washer	ASTM A276 304
14	Gland Bolt	ASTM A193 Gr.B8 or A2-70
15	Body Stud Bolt	ASTM A193 Gr.B8 or A2-70
16	Body Nut	ASTM A194 Gr.8A or A2-70
17	Antistatic Spring	ASTM A313 302



### BALL CONFIGURATIONS

<p><b>PFA Ball (Standard)</b> suitable for most applications</p>	<p><b>Al<sub>2</sub>O<sub>3</sub> Ceramic Ball (Optional)</b> ideal in chlorine applications</p>	<p><b>V-Control Ball (Optional)</b> for fine flow control</p>



### LINED BALL VALVE ANSI/ASME CLASS 150

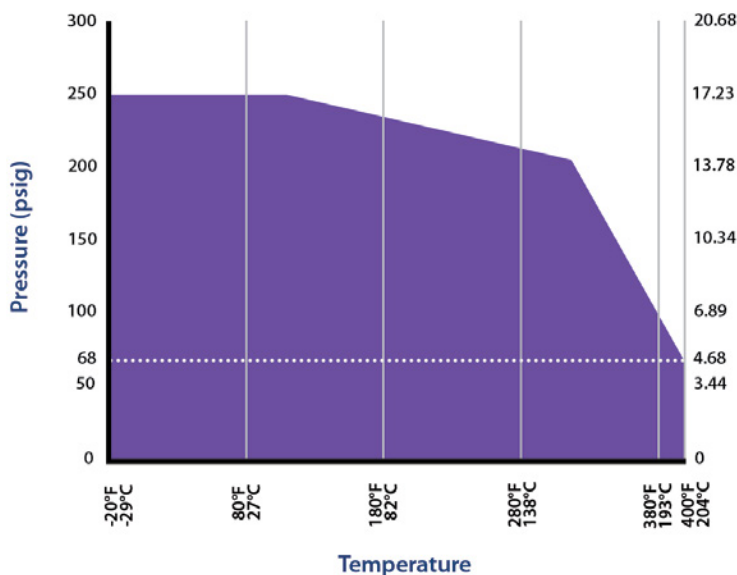
Flanged Ends Wrench Operated  
(Size) BL2-F152/F/W-DI/304-PFA-3  
Gears and Actuators Optional on All Sizes  
Dimensions to ANSI B16.42 & B16.10  
N = Number of holes

SIZE	d		H		E		M	ISO 5211	L		D		K		A		d1		N	T		f1		f2		Weight	
	in	mm	in	mm	in	mm			in	mm	in	mm	in	mm	in	mm	in	mm		in	mm	in	mm	in	mm	in	mm
1/2"	0.59	15.0	3.27	83.0	5.71	145.0	M5	F04	4.25	108.0	3.50	88.9	2.38	60.5	1.49	38.0	0.63	15.9	4	0.44	11.2	0.11	2.7	0.04	1.1	6.0	2.7
3/4"	0.79	20.0	3.31	84.0	5.71	145.0	M5	F04	4.61	117.0	3.88	98.6	2.75	69.9	1.69	42.9	0.63	15.9	4	0.44	11.2	0.12	3.1	0.06	1.5	7.3	3.3
1"	0.98	25.0	3.98	101.0	6.50	165.0	M6	F05	5.00	127.0	4.25	108.0	3.12	79.2	2.00	50.8	0.63	15.9	4	0.44	11.2	0.12	3.1	0.06	1.5	10.6	4.8
1 1/2"	1.57	40.0	5.04	128.0	8.86	225.0	M8	F07	6.50	165.0	5.00	127.0	3.88	98.6	2.91	73.2	0.63	15.9	4	0.57	14.4	0.12	3.1	0.06	1.5	19.4	8.8
2"	1.97	50.0	5.35	136.0	8.86	225.0	M8	F07	7.00	178.0	6.00	152.4	4.75	120.7	3.62	91.9	0.75	19.1	4	0.62	15.8	0.12	3.1	0.06	1.5	24.5	11.1
2 1/2"	2.56	65.0	6.61	168.0	13.78	350.0	M8	F07	7.48	190.0	7.00	177.8	5.50	139.7	4.12	104.6	0.75	19.1	4	0.69	17.6	0.12	3.1	0.06	1.5	35.1	15.9
3"	3.15	80.0	6.97	177.0	13.78	350.0	M8	F07	7.99	203.0	7.50	190.5	6.00	152.4	5.14	130.6	0.75	19.1	4	0.75	19.1	0.12	3.1	0.06	1.5	48.3	21.9
4"	3.94	100.0	9.17	233.0	15.75	400.0	M10	F10	9.02	229.0	9.00	228.6	7.50	190.5	6.20	157.2	0.75	19.1	8	0.88	22.3	0.12	3.1	0.06	1.5	74.1	33.6
6"	5.71	145.0	11.10	282.0	18.37	466.5	M12	F12	10.51	267.0	11.00	279.4	9.50	241.3	8.50	215.9	0.87	22.2	8	0.94	23.8	0.14	3.6	0.08	2.0	152.8	69.3

### VALVE OPERATING TORQUES

SIZE		0 PSI / Δp 0 bar		45 PSI / Δp 3 bar		90 PSI / Δp 6 bar		150 PSI / Δp 10 bar		200 PSI / Δp 14 bar		275 PSI / Δp 19 bar	
in	mm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm	in-lbs	Nm
1/2"	15	34.5	3.9	34.5	3.9	34.5	3.9	34.5	3.9	34.5	3.9	34.5	3.9
3/4"	20	43.3	4.9	43.3	4.9	43.3	4.9	43.3	4.9	43.3	4.9	43.3	4.9
1"	25	47.7	5.4	47.7	5.4	47.7	5.4	47.7	5.4	47.7	5.4	47.7	5.4
1 1/2"	40	77.8	8.8	77.8	8.8	77.8	8.8	77.8	8.8	77.8	8.8	77.8	8.8
2"	50	330.1	37.3	330.1	37.3	330.1	37.3	330.1	37.3	346.9	39.2	346.9	39.2
2 1/2"	65	156.6	17.7	156.6	17.7	156.6	17.7	160.1	18.1	160.1	18.1	169.0	19.1
3"	80	485.9	54.9	485.9	54.9	485.9	54.9	485.9	54.9	503.6	56.9	503.6	56.9
4"	100	460.2	52.0	469.0	53.0	469.0	53.0	469.0	53.0	469.0	53.0	477.0	53.9
6"	150	2,079.9	235.0	2,079.9	235.0	2,079.9	235.0	2,345.4	265.0	2,345.4	265.0	2,433.9	275.0

### OPERATING PRESSURE-TEMPERATURE CHART LINED BALL VALVES



### FLOW COEFFICIENT

SIZE		Cv
in	mm	
1/2"	15	19
3/4"	20	45
1"	25	88
1 1/2"	40	242
2"	50	425
2 1/2"	65	783
3"	80	1,182
4"	100	2,130
6"	150	3,000

#### NOTES:

- The information on this catalog is provided for general informational purposes only.
- For all technical parameters of the product please contact your local FluoroSeal sales office or authorized representative.

# ORDERING INSTRUCTIONS



Size	Valve Type	Port Type	Pressure Class	Flow Pattern	End Connection	Operator	Body Material	Trim Material	Lining Material	Body Bolt Material	Special
1/2" to 6"	BL2	F	15	2	F /						
<b>Size</b>											
1/2" to 6"											
<b>Valve Type</b>											
2-Piece Lined Ball Valve with Lined Ball & Stem											
<b>Port Type</b>											
F Full Port											
<b>Pressure Class</b>											
ANSI Class 150											
<b>Flow Pattern</b>											
2-Way											
<b>End Connection</b>											
F Flanged Raised Face											
<b>Operator</b>											
B Bare Stem											
WL Wrench + Locking Device (Standard)											
WXT Wrench + Stem Extension											
EG Enclosed Gear											
EGL Enclosed Gear + Locking Device											
<b>Body Material</b>											
DI ASTM A395. Gr. 65-45-15 /PFA Lined (Standard)											
304 ASTM A351. Gr. CF8 / PFA Lined											
<b>Trim Material: Ball/Seat - Seat Insert - Stem</b>											
304 ASTM A351. Gr. CF8 / PFA Lined Full-port (Standard)											
304V ASTM A351. Gr. CF8 / PFA Lined V-port											
ALO Al <sub>2</sub> O <sub>3</sub> Ceramic Not Lined											
<b>Lining Material</b>											
PFA PFA Fluorocarbon											
<b>Body Bolt Material</b>											
1	B7*	2	B7M*								
3	B8* (Standard)	4	B16*								
5	B8M Class1*	6	B8M Class 2*								
7	L7	8	L7M								
11	A20	12	A20 (Teflon Coated)								
* According to ASTM A193											
<b>Special</b>											
CL Prepared for Chlorine Service											
HOX Prepared for Hydrogen Peroxide											
ISY Prepared for Isocyanate Service											
OXY Prepared for Oxygen Service											
PHOS Prepared for PhosgeneService											

## MODEL SELECTION EXAMPLE

Example: 1/2"-BL2 F152 F/EG-DI-304-PFA-1-CL  
 Description: 1/2", 2-Piece Lined Ball Valve with Lined Ball & Stem, Full Port, ANSI Class 150, with 2-way flow pattern, Flanged Raised Face, Enclosed Gear, Ductile Iron body PFA Lined, 304 Austenitic Stainless Steel Trim with PFA lining, B7 Body Bolt, and prepared for Chlorine Service.

## NOTES:

1. For all technical parameters of the product please refer to this catalog, additional information can be obtained from your local FluoroSeal sales office or authorized representative.
2. Customization for specific applications is available upon request.

**CONTROLLING PROVISIONS**

These terms and conditions shall control with respect to any purchase order or sale of FluoroSeal Inc.'s products. No waiver, alteration or modification of these terms and conditions whether on Buyer's purchase order or otherwise, shall be valid unless the waiver, alteration or modification is specifically accepted in writing and signed by an authorized representative of FluoroSeal Inc.

**DELIVERY**

FluoroSeal Inc. will make every effort to complete delivery of products as indicated on its acceptance of an order, but FluoroSeal Inc. assumes no responsibility or liability, and will accept no back charge, for loss or damage due to delay or inability to deliver caused by acts of God, war, labor difficulties, accident, delays of carriers, by contractors or suppliers, inability to obtain materials, shortages of fuel and energy, or any other causes of any kind whatever beyond the control of FluoroSeal Inc. FluoroSeal Inc. may terminate any contract of sale of its products without liability of any nature, by written notice to Buyer, in the event that the delay in delivery or performance resulting from any of the aforesaid causes shall continue for a period of sixty (60) days. Under no circumstances shall FluoroSeal Inc. be liable for any special or consequential damages or for loss, damage, or expense (whether or not based on negligence) directly or indirectly arising from delays or failure to give notice of delay.

**WARRANTY**

FluoroSeal Inc. warrants for one year from the date of shipment its manufactured products to the extent that FluoroSeal Inc. will replace those having defects in material or workmanship when used for the purpose and in the manner which FluoroSeal Inc. recommends. If FluoroSeal Inc.'s examination discloses to its satisfaction that the products are defective and an adjustment is required, the amount of such adjustment shall not exceed the net sale price of the defective product(s) - no allowance will be made for labor or expense for 3rd party repair or replacement of defective products or damage resulting from same. FluoroSeal Inc. warrants other manufacturers products which it sells to the extent of the warranties and terms & conditions of their respective makers. Where engineering design or fabrication work is supplied, Buyer's acceptance of FluoroSeal Inc.'s design or of delivery of work shall relieve FluoroSeal Inc. of all further obligation, other than expressed in FluoroSeal Inc.'s product warranty.

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FluoroSeal Inc. neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of its engineering designs or products. This warranty shall not apply to any products or parts of products which (a) have been repaired or altered outside of FluoroSeal Inc.'s factory, in any manner; (b) have been subjected to misuse, negligence or accidents; (c) have been used in a manner contrary to FluoroSeal Inc.'s instructions or recommendations. FluoroSeal Inc. shall not be responsible for design errors due to inaccurate or incomplete information supplied by Buyer or its representatives.

**LIABILITY**

FluoroSeal Inc. will not be liable for any loss, damage, cost of repairs, incidental or consequential damages of any kind, whether based upon warranty (except for the obligation accepted by FluoroSeal Inc. under "Warranty" above), contract or negligence, arising in connection with the design, manufacture, sale, use or repair of the products or of the engineering designs supplied to Buyer. Any litigation will be interpreted in accordance with the laws of the Province of Québec, Canada and any suit, action or

proceeding relating to these terms and conditions may be instituted in any competent court sitting in the district of Montréal, Québec, Canada.

**RETURNS**

FluoroSeal Inc. cannot accept return of any product(s) unless its written permission has been first obtained, in which case same will be credited subject to the following: (a) all material returned must, on its arrival at FluoroSeal Inc.'s plant, be found to be in first-class condition; if not, cost of putting in saleable condition will be deducted from credit memoranda; (b) a handling charge deduction will be made from all credit memoranda issued for material returned; (c) transportation charges, if not prepaid, will be deducted from credit memoranda.

**SHIPMENTS**

All products sent out will be carefully examined, counted and packed. The cost of any special packing or special handling caused by Buyer's requirements or requests shall be added to the amount of the order. No claim for shortages will be allowed unless made in writing within ten (10) days of receipt of a shipment. Claims for products damaged or lost in transit should be made to the carrier, as FluoroSeal Inc.'s responsibility ceases, and title passes, on delivery to the carrier.

**SPECIAL PRODUCTS**

Orders covering special or non-standard products are not subject to cancellation except on such terms as FluoroSeal Inc. may specify on application.

**PRICES AND DESIGNS**

Prices and designs are subject to change without notice. All prices are F.O.B. Point of Shipment, unless otherwise stated.

**TAXES**

The amount of any sales, excise or other taxes, if any, applicable to the products, shall be added to the purchase price and shall be paid by Buyer unless Buyer provides FluoroSeal Inc. with an exemption certificate acceptable to the taxing authorities.

**NUCLEAR PLANTS**

Where the products, engineering design or fabrication is for nuclear plant applications, Buyer agrees (a) to take all necessary steps to add FluoroSeal Inc. as an insured supplier under the American Nuclear Insurers (ANI) pool and under the Mutual Atomic Energy Reinsurance Pool (MAERP) for property damage and liability insurance and if necessary steps could have been taken, but are not taken, Buyer shall hold FluoroSeal Inc. harmless against all such losses which could have been thus covered; (b) Buyer agrees to hold FluoroSeal Inc. harmless with respect to any personal injury or death, property damage or any other loss in a nuclear incident which is caused directly or indirectly by defective design, material, or workmanship, furnished by FluoroSeal Inc. and which is covered by insurance maintained by Buyer (or which could be so covered but with respect to which Buyer has elected to self-insure), and further agrees to waive subrogation by its carriers of such insurance against FluoroSeal Inc.; (c) as to nuclear hazards for which Buyer cannot obtain insurance coverage, the liability of FluoroSeal Inc. for any personal injury or death, property damage or any other loss directly caused by defective design, material, or workmanship furnished by FluoroSeal Inc. shall not exceed the value of the material furnished by FluoroSeal Inc. at the time of the loss occurrence.



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