

LINED TANK HEAT EXCHANGER EP TANK & CANISTER

LINED TANK & CONTAINER

LINED VESSEL & DRUM

LINED HEAT EXCHANGER

EP TANK, VESSEL, DRUM & CANISTER



FOOSUNG

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INTRODUCTION & FEATURES

01 INTRODUCTION

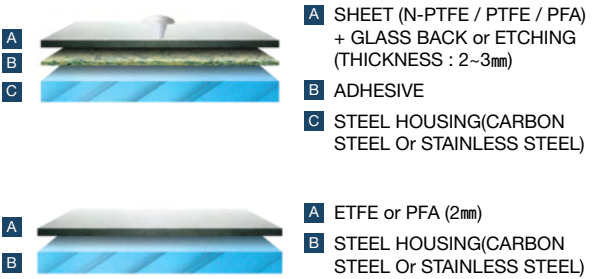
불소수지를 이용한 후성정공의 LINING TANK는 당사만의 축적된 라이닝 기술로 최고의 품질의 제품이 생산되고 있습니다. 불소수지의 내화학성, 비점착성의 특징을 사용하여 반도체 및 정밀화학산업, 정유화학, 일반화학, 제약 등 다양한 분야에서 사용되고 있습니다. 라이닝 방식은 진공접착식, 일반접착식, 로테이션몰딩이 있습니다.

The Lined Tank of Foosung Precision using fluoro-polymer is a product of the highest quality produced with our own accumulated lining technology. Our products are used in various fields such as semiconductors, fine chemical industries, petrochemicals, general chemicals, and pharmaceuticals, utilizing their chemical resistance and non-adhesive properties. The lining methods are vacuum bonding, general bonding and rotation molding.

フッ素樹脂が使われたFOOSUNG精工のライニングタンクは蓄積された弊社独自のライニング技術で 最高品質の製品が生産されています。
フッ素樹脂の耐化学性、非粘着性等の特性を利用し、半導体及び精密化学産業、石油化学、一般化学、製薬等の様々な分野で使われています。ライニングの方式は真空粘着式、一般粘着式、回転成形等があります。

厚成精工의 氟树脂衬氟罐体拥有多年的技术经验, 充分保证了产品的高质量。
利用氟树脂的耐化学性、非粘着性特点, 已应用于半导体及精细化工、炼油化工、普通化工、制药等多个领域。
衬里方式分为抽真空粘贴法、普通粘贴法, 旋转成型法。

02 SECTION VEIW



02 MANUFACTURING PROCESS



03 INSPECTION

- ✓ VISUAL CHECK
- ✓ DIMENSION CHECK
- ✓ PIN HOLE TEST
- ✓ LEAKAGE TEST
- ✓ MEGGER TEST
(INSULATION RESISTANCE MEASUREMENT)
- ✓ PARTICLE CHECK
- ✓ PAINTING or OUTSIDE TREATMENT CHECK

PRODUCT GUIDE

LINED TANK & EP TANK

당사에서 제작하는 TANK는 내부에 불소수지를 사용하여 라이닝된 제품과 전해연마(EP) 방식으로 내부 처리한 제품입니다. 당사에서는 불소수지 SHEET를 TANK 내부에 부착하는 방식으로 제작되며, 모든 원자재는 고순도의 불소수지를 사용하고 있습니다. 전해연마 제품은 2004년 부터 쌓아온 많은 경험과 노하우를 통하여 반도체급의 순정성과 안전성을 인정받고 있습니다.

The TANKs manufactured by our company include products lined internally using fluorine resin and products internally treated using electrolytic polishing (EP). At our company, the lining is manufactured by attaching a fluoropolymer sheet to the inside of the tank, and all raw materials use high-purity pure fluoropolymer. Electrolytic polishing products are recognized for their semiconductor-grade purity and safety through extensive experience and know-how accumulated since 2004.

弊社で製作されるタンクの内部はフッ素樹脂で作られたライニング製品と電解研磨 (EP) 方式で内部処理された製品になります。弊社でフッ素樹脂シートをタンクの内部に付着する方でライニングが行われ、使われるフッ素樹脂は全ての原資材が高純度の純粋なフッ素樹脂になります。電解研磨製品は2004年から蓄積された豊かな経験とノウハウを通じて半導体級の純正性と安全性が認められています。

我司制作的罐体内部是使用四氟衬里产品及采用电解抛光(EP) 方式进行内部处理的产品。我司采用将四氟板材粘贴到罐体内部的方式制作衬里,所有原材料均使用高纯四氟制品。电解抛光产品始于2004年,积累了丰富的技术经验,在半导体级领域的纯净性和安全性得到认可。



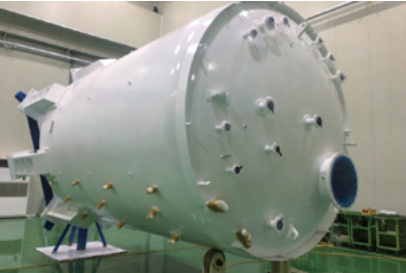
CONE ROOF TYPE



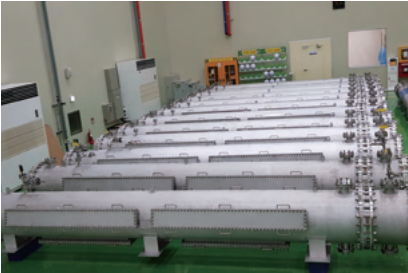
HORIZONTAL TYPE (2 HEAD)



VERTICAL TYPE (2 HEAD)



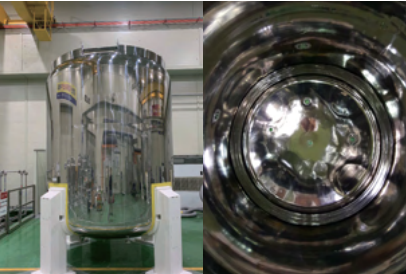
VERTICAL TYPE (2 HEAD)



HEAT EXCHANGER(SHELL & TUBE TYPE)



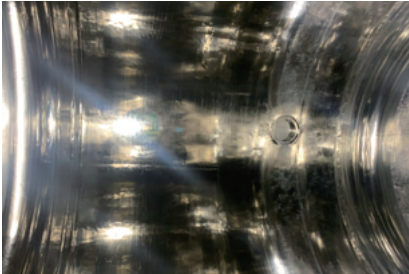
TANK CONTAINER



EP TANK



LINING (FLUORO-POLYMER SHEET)

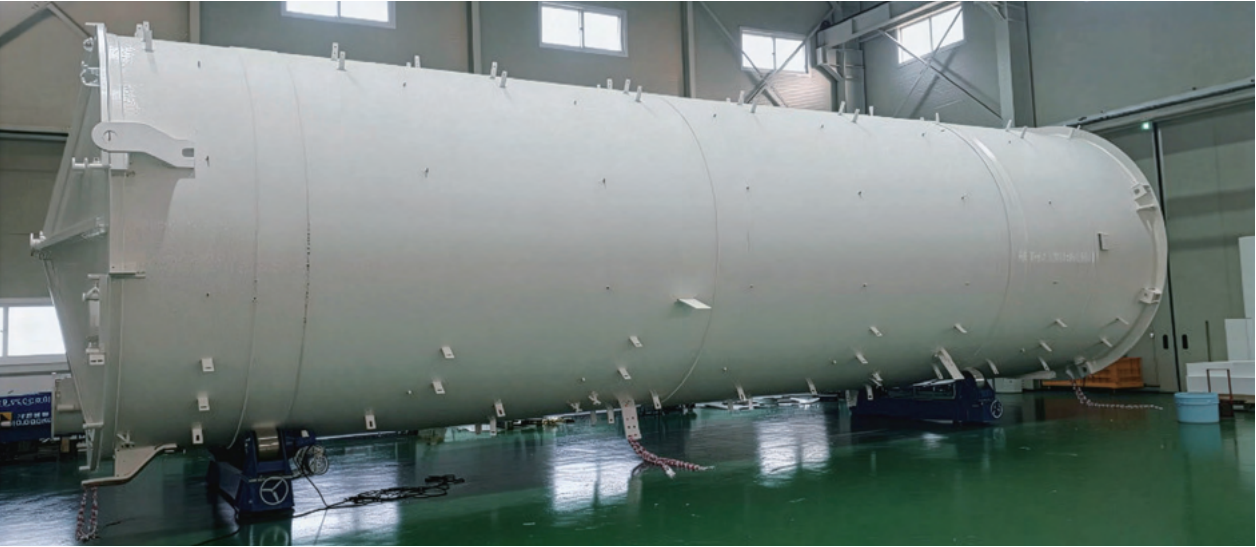
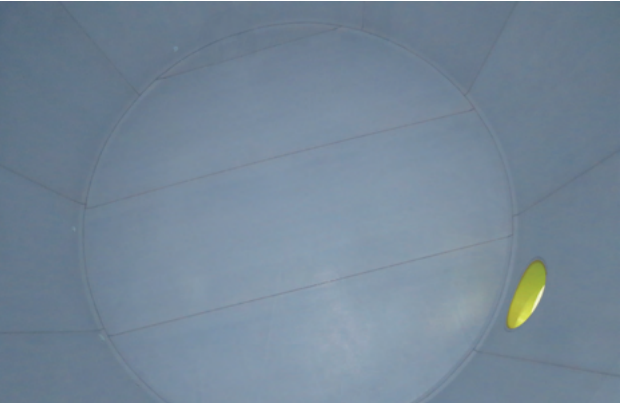
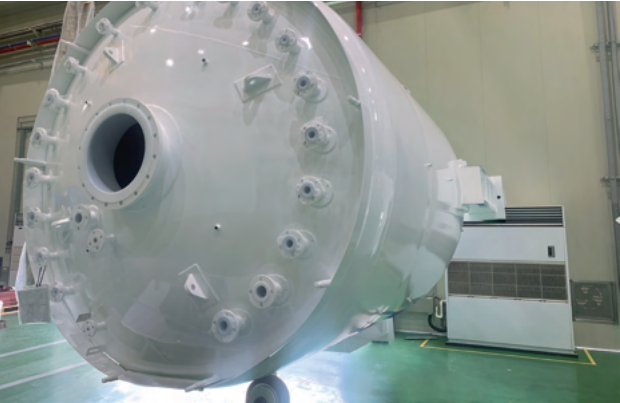


ELECRIC POLISHED

STORAGE TANK

CAPACITY	upto 200m³ (at Shop) over 200m³ - Field Manufacturing
Type	Cone Roof Type One Head Vertical Two Head Vertical with Skirt ** Head forming : 10% Dished Cylinder Type Rectangular Type
Applicable Material	Steel Housing : Stainless or Carbon Steel Lining Sheet : N-PTFE PTFE PFA
Operating Temperature (Recommend)	upto 80℃

샵에서 제작되는 모든 제품은 대한민국에서 도로 운송이 가능하도록 제작됩니다.
All products manufactured in the shop are manufactured for road transport within South Korea.
ショップで製造されたすべての製品は、大韓民国で道路輸送を可能にするように製造されています。
我司制作最大产品尺寸，是依据道路运输允许范围内生产制作。



SUPPLY TANK / MIXING TANK

CAPACITY	upto 200m³ (at Shop)
Type	Two Head Vertical With Leg or Lug Support ** Head forming : 10% Dished ** If necessary, aseismic design applying.
Applicable Material	Steel Housing : Stainless or Carbon Steel Lining Sheet : N-PTFE PTFE PFA
Operating Temperature (Recommend)	upto 80℃

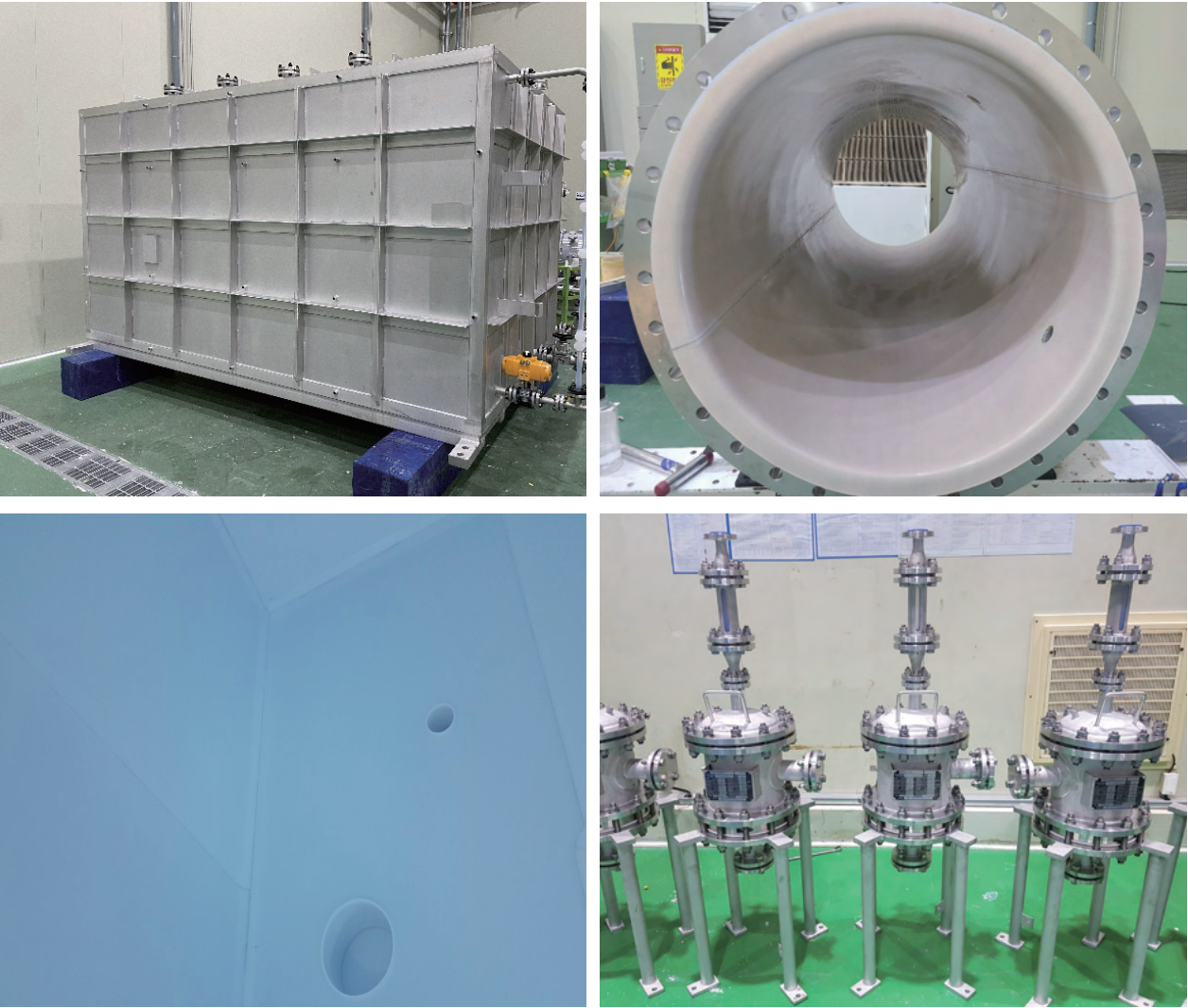
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RECTANGULAR TANK (SQUARE TANK) & TOWER, FILTER HOUSING

CAPACITY	upto 200m³ (at Shop)
Type	Square type Inner Supporting Type
Applicable Material	Steel Housing : Stainless or Carbon Steel Lining Sheet : N-PTFE PTFE PFA
Operating Temperature (Recommend)	upto 80℃

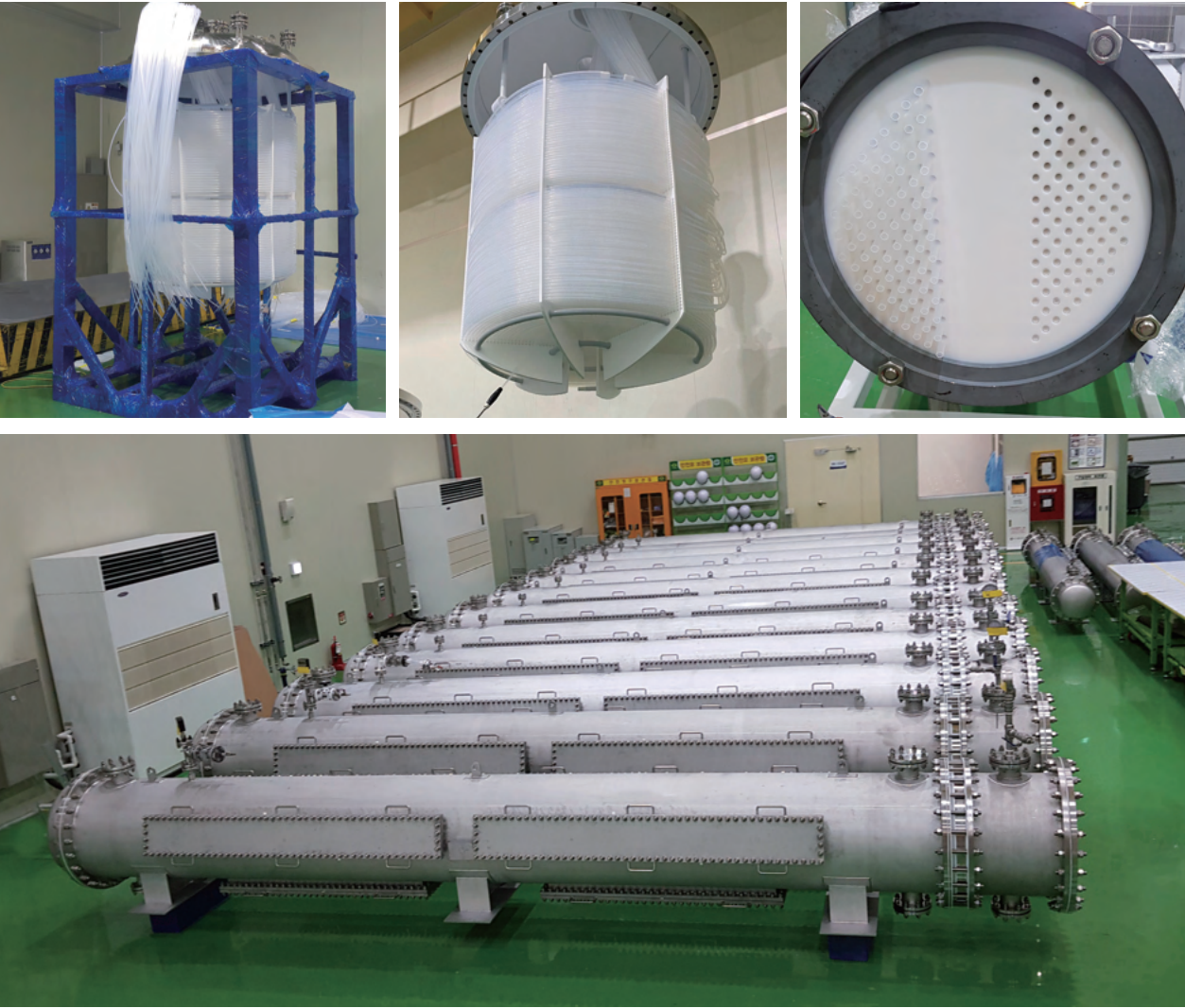
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HEAT EXCHANGER

CAPACITY	upto 200m³ (at Shop)
Type	Shell and Tube Type Coil insert Type
Applicable Material	Steel Housing : Stainless or Carbon Steel Lining Sheet : N-PTFE PTFE PFA Tube : PFA
Operating Temperature (Recommend)	upto 80℃ for Lining side

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EP TANK & CANISTER (ELECTRIC POLISHED)

CAPACITY	upto 30m³
Type	Two Head Vertical(Horizontal) With Leg or Lug Support Tank Container
Applicable Material	Stainless Steel (Grade : 316L, Recommend)

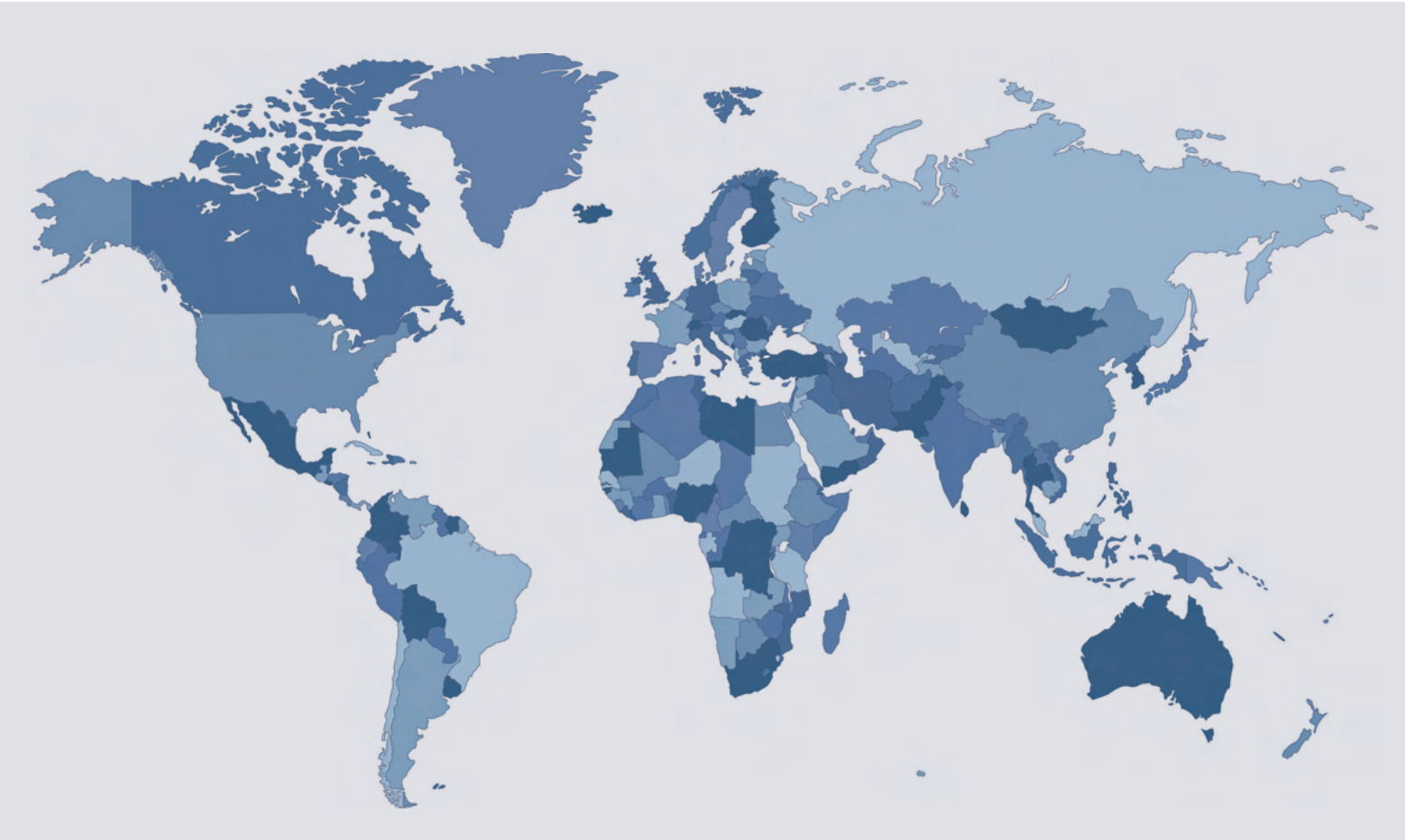
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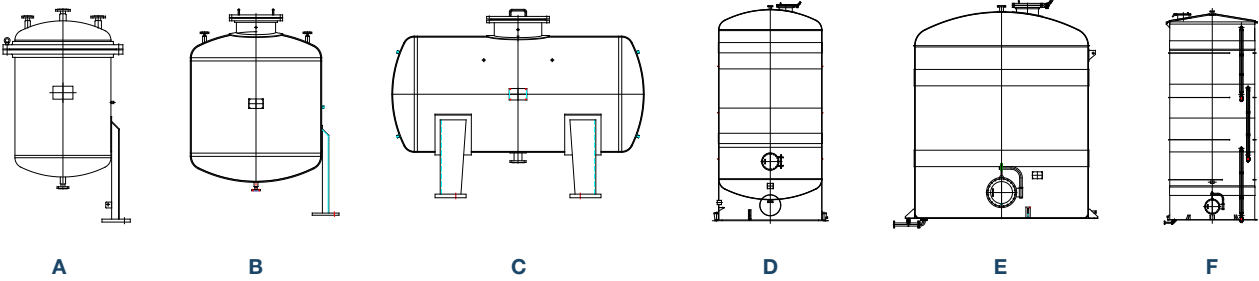
TANK CONTAINER / TANK LORRY

CAPACITY	upto 24m³ (20FT) upto 30m³ (30FT) ** 상기 용량은 단순 제작가능 사이즈이며, 사용 약품의 비중 및 배관 구성에 따라 제작가능 사이즈가 감소할 수 있음 The above capacity is a simple manufacturing size, and the manufacturing size may decrease depending on the specific gravity of the chemical used and the piping configuration. 容量は単純製作可能サイズであり、使用薬品の比重および配管構成によって製作可能サイズが減少することがある 上述容量为单纯可制作尺寸，需要根据使用药液的比重和管道配置，确定容积容量。
Type	Tank Container (국내운송용, for transport in Republic of Korea.) ISO Tank Container (해상운송용, For Exportation) ** Available inside Lining or Electric Polishing for Both type of Container .
Applicable Material	Steel Housing : Stainless or Carbon Steel Lining Sheet : N-PTFE PTFE PFA
Operating Temperature (Recommend) ** Trailer is not include.	upto 80℃ for Lining side

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REFERENCE TANK SIZE

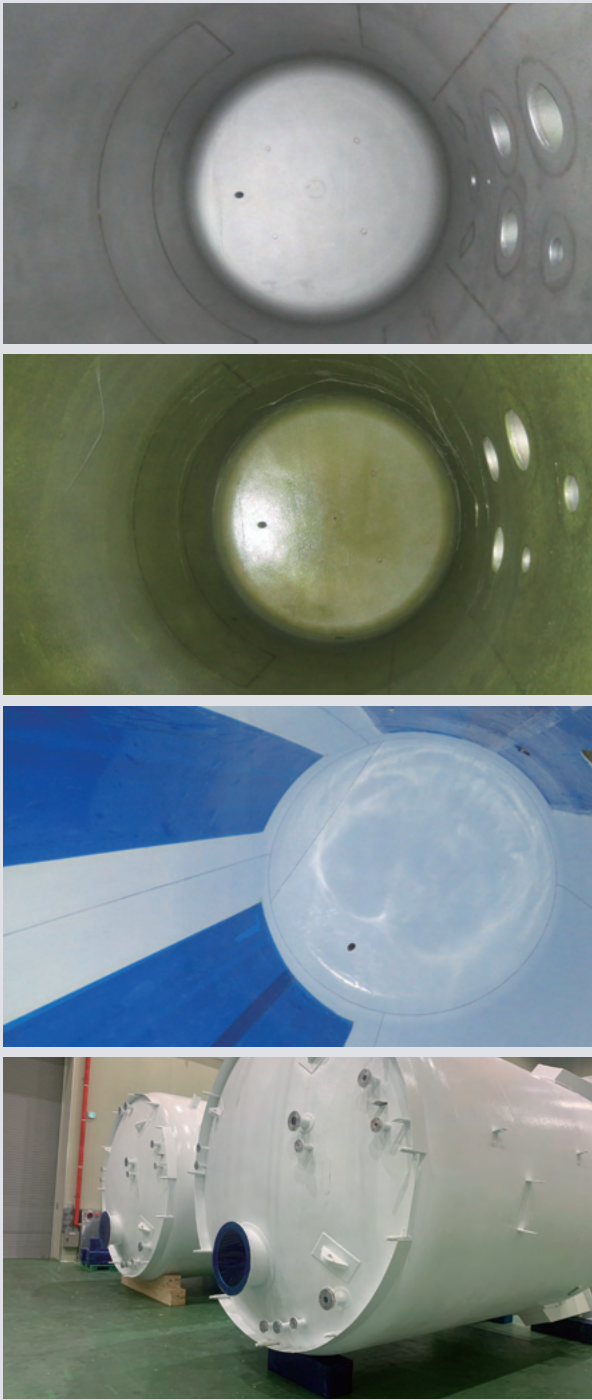
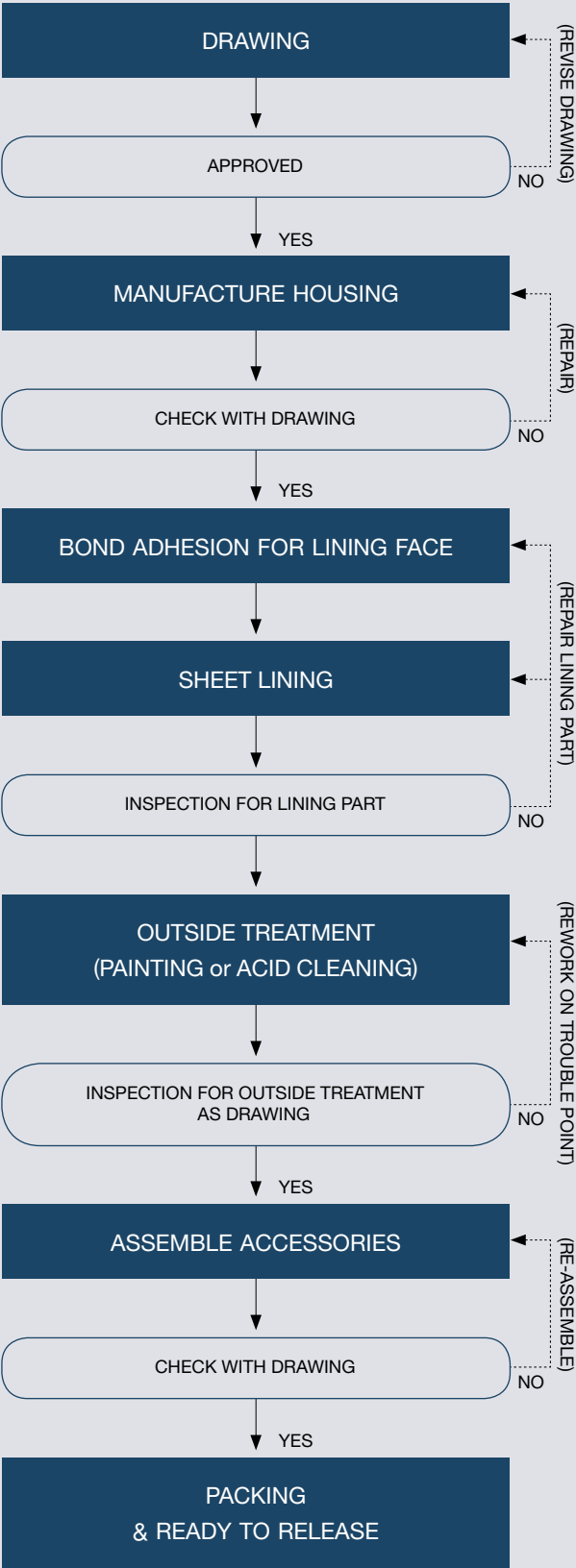


VOLUMN(㎡)	TYPE	DIMENSION REFERENCE (mm)	STEEL THICKNESS	REMARK
0.1	A	ID 500 × 450 TL	4~8mm	VERTICAL TANK WITH GIRTH FLANGE
0.5	A	ID 800 × 900 TL	4~8mm	
1	A	ID 1050 × 1050 TL	4~8mm	
1.5	A/B/C	ID 1170 × 1270 TL	6~12mm	VERTICAL TANK WITH GIRTH FLANGE AND MAN HOLE
2	A/B/C	ID 1220 × 1580 TL	6~12mm	
3	A/B/C	ID 1480 × 1580 TL	6~12mm	
5	A/B/C	ID 1750 × 1860 TL	6~12mm	VERTICAL or HORIZONTAL TYPE STORAGE or PRESSURE TANK WITH MANHOLE
7	A/B/C	ID 1850 × 2380 TL	6~12mm	
10	A/B/C	ID 2050 × 2780 TL	6~12mm	
15	B/C	ID 2480 × 2800 TL	6~12mm	
20	B/C	ID 2720 × 3100 TL	6~12mm	
25	B/C	ID 3030 × 3090 TL	6~12mm	
30	D	ID 2860 × 4310 TL	9~15mm	
	E/F	ID 2900 × 4540 TL	9~15mm	
40	D	ID 3200 × 4570 TL	9~15mm	
	E/F	ID 3350 × 4570 TL	9~15mm	
50	D	ID 3400 × 5080 TL	9~15mm	2 HEAD WITH SKIRT TYPE or CON-ROOF TYPE STORAGE TANK WITH MANHOLE
	E/F	ID 3400 × 5510 TL	9~15mm	
60	D	ID 3500 × 5800 TL	9~15mm	
	E/F	ID 3630 × 5800 TL	9~15mm	
70	D	ID 3670 × 6160 TL	9~15mm	
	E/F	ID 3800 × 6150 TL	9~15mm	
80	D	ID 3800 × 6580 TL	9~15mm	
	E/F	ID 3800 × 7400 TL	9~15mm	
90	D	ID 3800 × 7500 TL	9~15mm	
	E/F	ID 3800 × 8300 TL	9~15mm	
100	D	ID 3800 × 8300 TL	9~15mm	
	E/F	ID 3800 × 9100 TL	9~15mm	

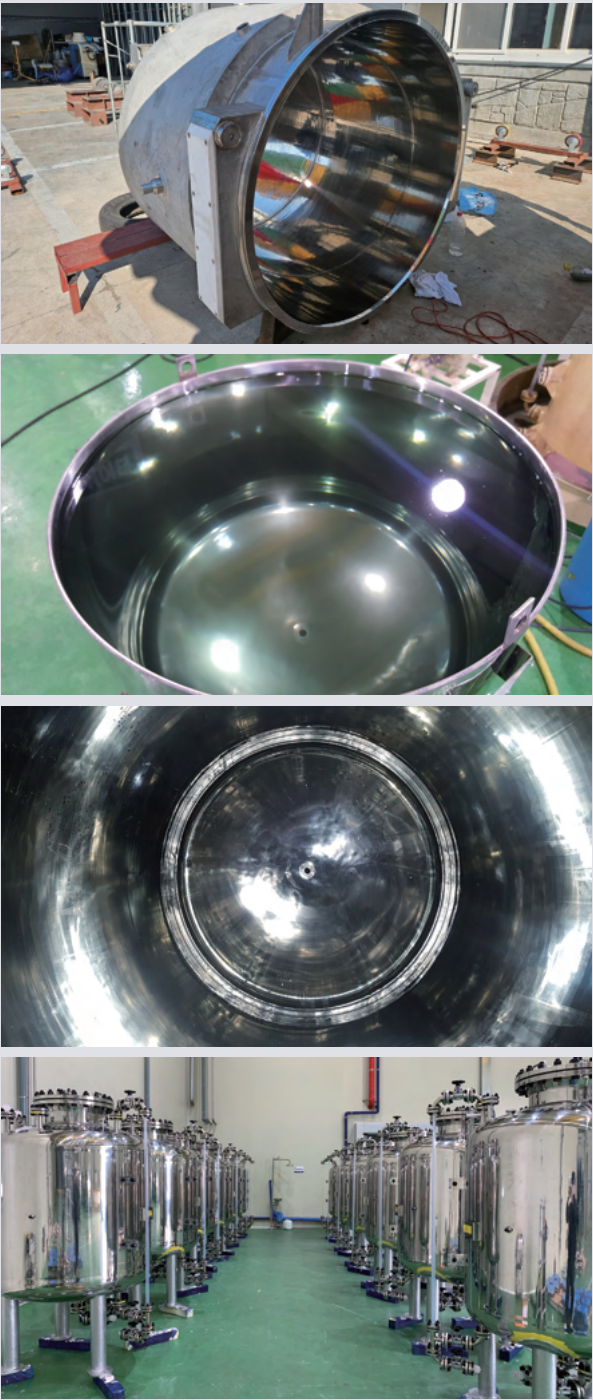
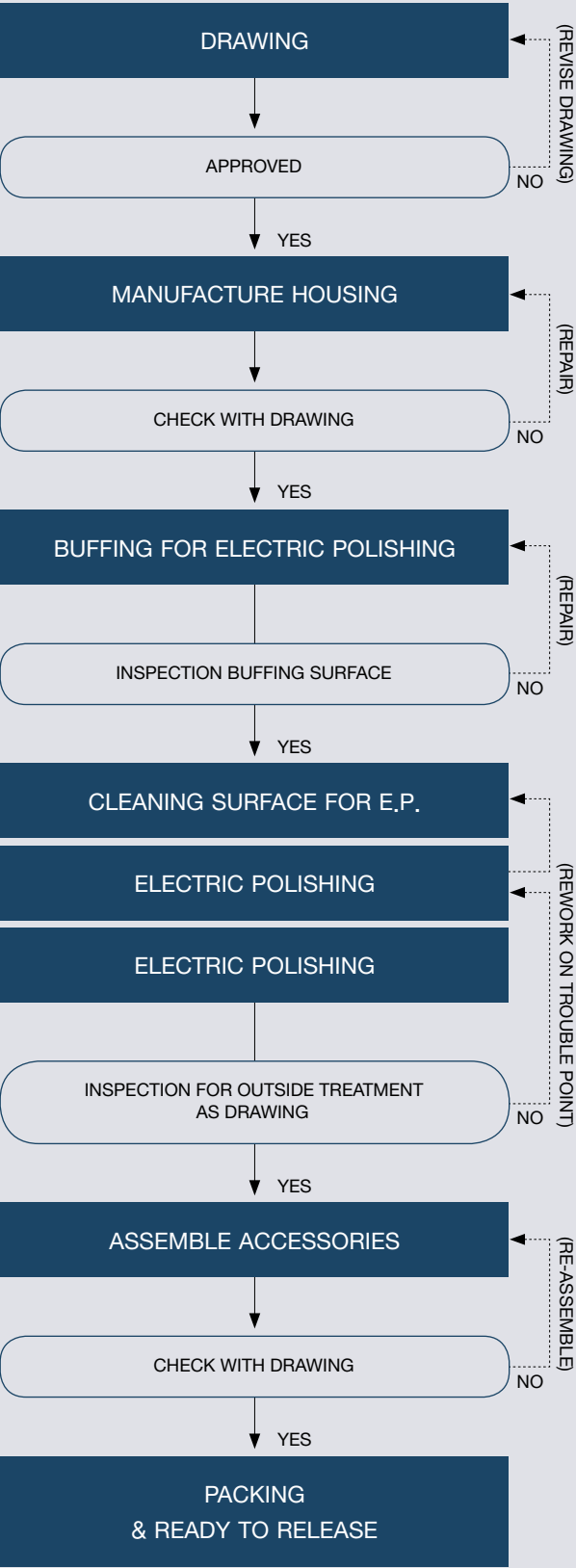
PROPERTIES OF FLUOROPOLYMER

특성 / Property		단위 / UNIT	ASTM Test Method	TFE (PTFE)	PFA	ETFE	FEP	CTFE	VdF(PVdF)	VF(PVF)
물리적성질 Physical	비중 Specific gravity	-	D792	2.14-2.20	2.12-2.17	1.7	2.12-2.17	2.1-2.2	1.75-1.78	1.4
	융점 Melting point	℃	D3418	327	302~310	270	253~282	210~212	170	200~210
	인장강도 Tensile strength	kgf/cm ²	D638	280~350	320	455	200~320	300~400	400~520	300~400
	신장율 Elongation	%	D638	200-400	280-300	200	250-330	80-250	100-300	150-200
	압축강도 Compressive strength	kgf/cm ²	D695	120	-	500	150	320-520	600	-
	인장탄성율 Modulus of elasticity in tension	10 ³ kgf/cm ²	D638	4	-	8.4	3.5			11
기계적성질 Mechanical	굽힘탄성율 Modulus of elasticity in bending	10 ³ kgf/cm ²	D790	3.5-6.3	6.7-7.0	14	6.7	17.6	14.0-18.0	-
	충격강도 IZOD Impact strength	kg·cm/cm	D256	16.3	Not Destroyed	Not Destroyed	Not Destroyed	13.6-14.7	19.6-21.8	-
	경도 Hardness	Rockwell	D785	R25	-	R50	R25	R75-95	R110-115	-
		Durometer	D2240	D55	D60	D75	D55	D74-90	D75-80	-
	열전도도 Thermal conductivity	10-4cal/cm·sec·℃	C177	5.9	-	5.7	6	4.7-5.3	3	4.9
	비열 Specific heat	cal/℃/g	D240	0.25	-	0.46-0.47	0.28	0.22	0.33	-
	선팅창계수 Coefficient of linear expansion	10-5/℃	D696	9.9 (23-66℃)	12 (21-100℃)	9-9.3 (20-90℃)	8.3-10.5 (-73~71℃)	4.5-7.0	8.5	3.95
	연속사용온도 Continuous service temperature	℃	-	260	260	150	200	180	150	107
	열변형온도 Heat distortion of temperature	4.6kgf/cm ² ·℃	D648	121	75	-	72	115	145	-
		18.5kgf/cm ² ·℃	D648	55	48	74	50	76	90	-
전기적성질 Electrical	체적저항율 Volume resistivity	Ω·cm	D257	>1018	>1018	>1016	>1018	>1016	2.0 × 1014	4 × 1013
	표면저항율 Surface resistivity	Ω	D257	>1016	>1016	5×1014	>1016	-	-	-
	절연파괴강도 Dielectric strength	(1/8inch) kV/mm	D149	16-24	20-24	16	20-24	20-24	10.2	-
	유전율60Hz Dielectric constant	-	D150	<2.1	2.1	2.6	2.1	2.24-2.8	8.4	-
	유전율103Hz Dielectric constant	-	D150	<2.1	2.1	2.6	2.1	2.27-2.7	7.72	7.4
	유전율106Hz Dielectric constant	-	D150	<2.1	2.1	2.6	2.1	2.3-2.5	6.43	-
화학적성질 Chemical	내산성 Acid-resistance	-	D543	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good
	내알칼리성 Akaline-resistance	-	D543	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good
	내용제성 Resistance to solvents	-	D543	Excellent	Excellent	Excellent	Excellent	Excellent	케톤또는 극성용매에 약함	-
내구성 Durability	연소성 Combustibility	-	D635	Incombustibility	Incombustibility	Incombustibility	Incombustibility	Incombustibility	Self-Extinguishing	Self-Extinguishing
	흡수율 Water absorption	-	D570	<0.01	0.03	0.029	<0.01	0	0.04	<0.5

PROCESS OF FLUOROPOLYMER SHEET LINING



PROCESS OF ELECTRIC POLISHING



LINED TANK / EP TANK
LINED PIPE & FITTING
LINED VALVE
AUTOMOBILE & PRECISION PART



후성정공(주) 불소수지사업부

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Homepage : www.fpi.co.kr (Fluoro Polymer Division)

1공장 : 강원도 원주시 문막읍 문막공단길 51

Factory #1 : 51, Munmakgongdan-gil, Munmak-eup, Wonju-si,
Gangwon-do, Republic of Korea

2공장 : 강원도 원주시 문막읍 문막공단길 287

Factory #2 : 287, Munmakgongdan-gil, Munmak-eup, Wonju-si,
Gangwon-do, Republic of Korea

중국공장(후성춘환FPI) : 중국 강소성 전장시 양중시 옥황로 63호

China Factory: No. 63, Yuhuang Road, Yongsheng Industrial Zone,
Baqiao Town, Yangzhong City, Jiangsu Province, China,

江苏省镇江市扬中市玉皇路 63号(中国)



후성정공(주) 불소수지사업부
FOOSUNG PRECISION IND. CO., LTD. FLUOROPOLYMER DIVISION