



**Type-21/21A Ball Valve**

### Standard Features (Sizes 1/2" – 6")

- Pressure rated up to 230psi (PVC, CPVC, PVDF)
- Double O-ring seals on stem for added protection
- Full bore, sizes 1/2" – 2"
- Full vacuum rated, all sizes
- Blocks in two directions, upstream and downstream, leaving full pressure on the opposite end of the valve
- Integrally molded ISO mounting pad for both manual and actuated operations
- Integrally molded base pad to mount valves securely on panel mounting
- PTFE seats with elastomeric backing cushions ensure bubble tight shut-off and a low fixed torque, while at the same time compensating for wear
- True union design for easier installation or repairs without expanding the pipe system
- Built-in spanner wrench on the handle for valve disassembly and assembly
- Two sets of end connectors (socket and threaded) included with all PVC and CPVC valves in sizes 1/2" – 2"
- CPVC threaded end connectors on sizes 1/2" – 1" come with stainless steel reinforcing rings
- New PTFE seat design – Facilitates easier field maintenance if required
- Tapered O-ring groove – Helps to keep the end connector O-rings on the valve body during installation
- Body flats – Flats have been added to either side of the valve body where a wrench can be applied to prevent the valve body from turning when the union nuts are tightened
- 1/2 - 2 " PVC and CPVC T-21A design

### Options

- Pneumatic and electric actuators and accessories
- Stem extensions
- 2" square operating nut or "T" nut
- Locking handles
- Limit switches
- Vented ball

### Specifications

- Sizes:** 1/2" – 6"  
**Models:** PVC & CPVC: Socket, Threaded and Flanged (ANSI)  
 PP & PVDF: IPS and Metric (DIN) Socket, Threaded, Butt and Flanged (ANSI)  
**Bodies:** PVC, CPVC, PP and PVDF  
**Seats:** PTFE backed with EPDM or FKM  
**Seals:** EPDM or FKM or AFLAS®†  
**Sizes 1/2" - 4" PVC/EPDM/FKM Models**  
**NSF-61 Certified**

† Trademark of Asahi Glass Co., Ltd.

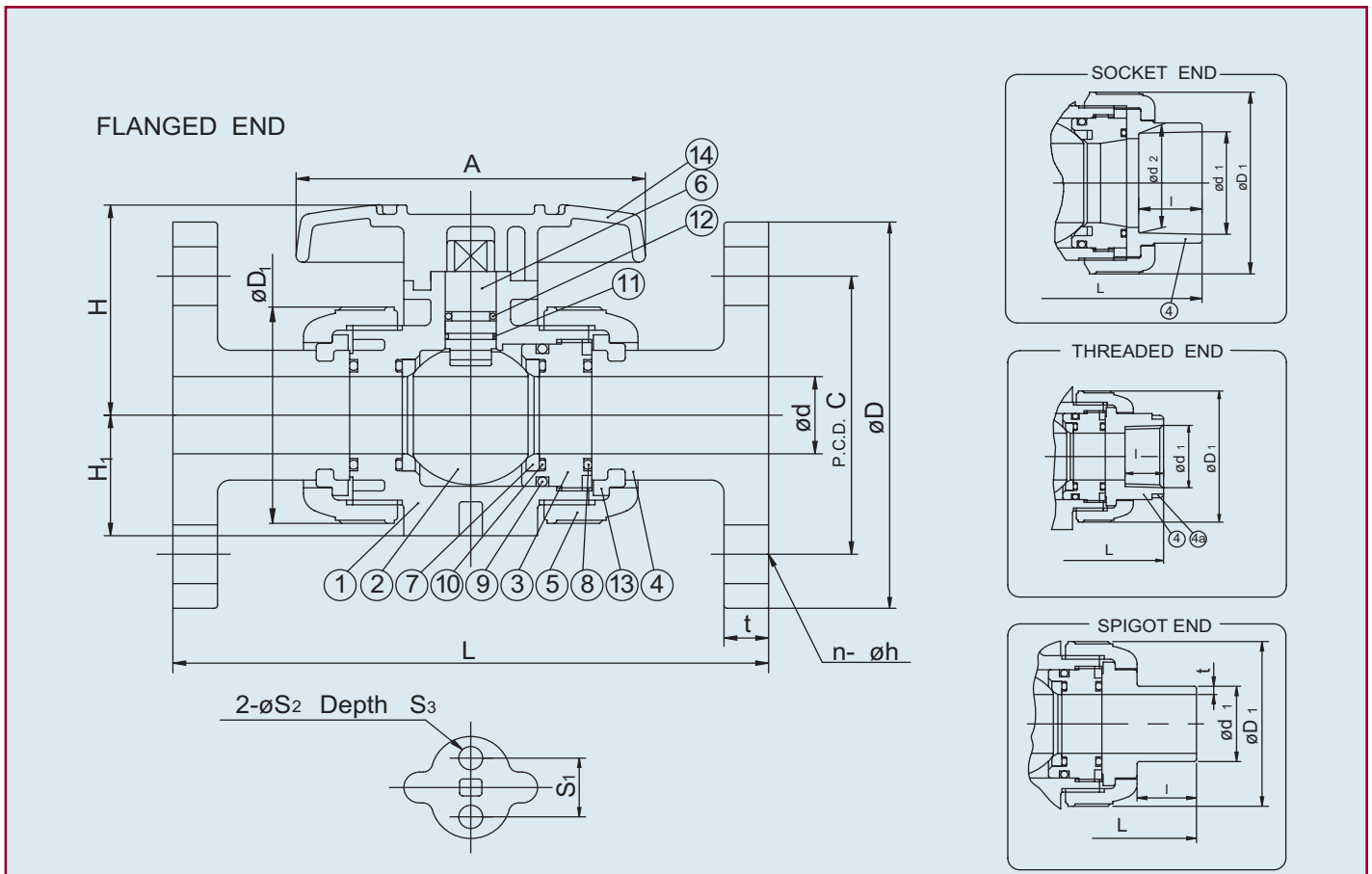
### Parts List (Sizes 1/2" – 2")

PARTS			
NO.	DESCRIPTION	PCS.	MATERIAL
1	Body	1	PVC, CPVC, PP, PVDF
2	Ball	1	PVC, CPVC, PP, PVDF
3	Carrier	1	PVC, CPVC, PP, PVDF
4	End Connector	2	PVC, CPVC, PP, PVDF
5	Union Nut	2	PVC, CPVC, PP, PVDF
6	Stem	1	PVC, CPVC, PP, PVDF
7	Seat	2	PTFE
8	O-Ring (A)	2	EPDM, FKM, Others
9	O-Ring (B)	1	EPDM, FKM, Others
10	O-Ring (C)	2	EPDM, FKM, Others
11	O-Ring (D)	1	EPDM, FKM, Others
12	O-Ring (E)	1	EPDM, FKM, Others
13	Stop Ring*	2	PVDF
14	Handle	1	ABS
4a	Ring**	2	304 Stainless Steel

\* Used for flanged end.

\*\* Used for CPVC body, threaded end, 1/2"-1".





**Dimensions (Sizes 1/2" - 2") (in.)**

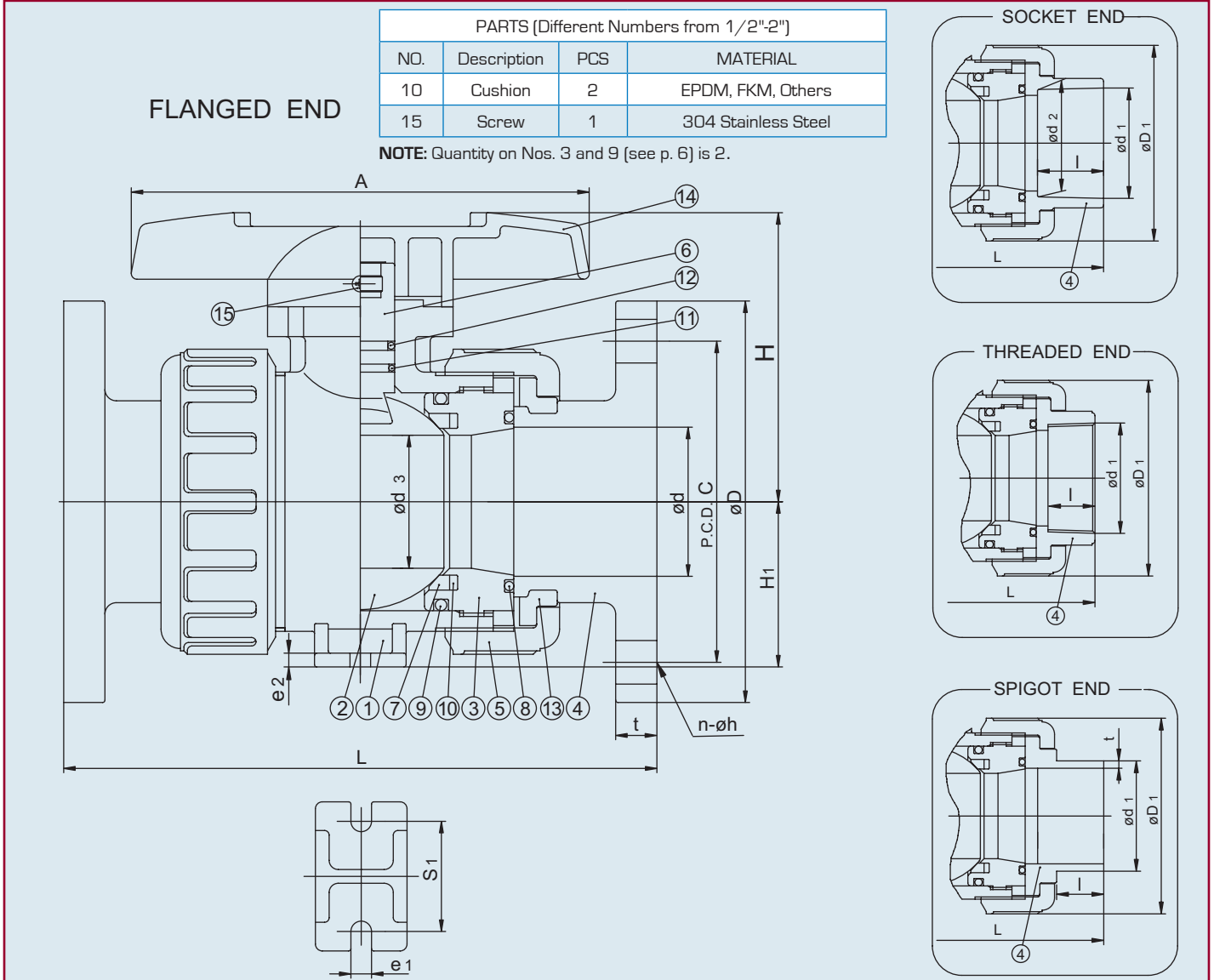
NOMINAL SIZE		FLANGED							SOCKET										
		ANSI CLASS 150							PVC, CPVC				PP, PVDF (DIN)				PP, PVDF (IPS)		
		d	D	C	n	h	L	t	ASTM SCH 80				DIN 16962				d1	/	L
INCHES	mm							d1	d2	/	L	d1	d2	/	L	d1	/	L	
1/2	15	0.59	3.50	2.38	4	0.62	5.63	0.47	0.848	0.836	0.875	4.45	0.768	0.760	0.57	3.90	0.83	0.87	4.45
3/4	20	0.79	3.88	2.75	4	0.62	6.77	0.55	1.058	1.046	1.000	5.08	0.965	0.957	0.63	4.45	1.03	1.00	5.08
1	25	0.98	4.25	3.12	4	0.62	7.36	0.55	1.325	1.310	1.125	5.75	1.240	1.232	0.71	4.84	1.30	1.13	5.75
1-1/4	32	1.26	4.62	3.50	4	0.62	7.48	0.63	1.670	1.655	1.250	6.46	1.553	1.543	0.81	5.47	1.65	1.25	6.46
1-1/2	40	1.57	5.00	3.88	4	0.62	8.35	0.63	1.912	1.894	1.375	7.24	1.947	1.937	0.93	5.87	1.89	1.37	7.24
2	50	2.01	6.00	4.75	4	0.75	9.21	0.63	2.387	2.369	1.500	8.23	2.461	2.445	1.08	6.93	2.36	1.50	8.23

NOMINAL SIZE		THREADED			SPIGOT (BUTT END)												
					PP, PVDF												
					DIN 3442		PP	PVDF									
INCHES	mm	d1	/	L	d1	/	t	t	L	D1	H	H1	A	S1	S2	S3	
1/2	15	1/2 - 14 NPT		0.59	4.02	0.787	0.728	0.098	0.075	4.882	1.89	2.03	1.14	3.62	0.75	0.29	0.43
3/4	20	3/4 - 14 NPT		0.67	4.72	0.984	0.866	0.106	0.075	5.669	2.36	2.34	1.38	3.94	0.75	0.29	0.43
1	25	1 - 11-1/2 NPT		0.79	5.16	1.260	0.886	0.118	0.094	6.063	2.76	2.68	1.54	4.33	0.75	0.29	0.43
1-1/4	32	1-1/4 - 11-1/2 NPT		0.87	5.91	1.575	1.024	0.146	0.094	6.850	3.23	3.17	1.85	4.76	1.18	0.35	0.59
1-1/2	40	1-1/2 - 11-1/2 NPT		0.98	6.42	1.968	1.260	0.181	0.118	7.638	3.94	3.50	2.17	5.16	1.18	0.35	0.59
2	50	2 - 11-1/2 NPT		1.10	7.76	2.480	1.417	0.228	0.118	8.819	4.96	4.04	2.60	6.26	1.18	0.35	0.59

**Note:** The shape and appearance of assembly differ a little with nominal size compared to this drawing.

# Type-21/21A

# Ball Valves



Dimensions (Sizes 2-1/2" – 4") (in.) For 6" size consult factory.

NOMINAL SIZE		FLANGED										SOCKET											
		ANSI CLASS 150										PVC, CPVC				PP, PVDF (DIN)			PP, PVDF (IPS)				
		L					ASTM SCH 80					DIN 16962			PP	PVDF	PP		PVDF				
INCHES	mm	d	D	C	n	h	PVC CPVC	PP	PVDF	t	d1	d2	/	L	d1	d2	/	L	L	d1	/	L	L
2-1/2	65	2.56	7.0	5.5	4	0.75	10.20	10.12	10.08	0.71	2.889	2.868	1.750	9.45	2.923	2.911	1.22	8.07	8.03	2.88	1.752	9.37	9.33
3	80	3.07	7.5	6.0	4	0.75	12.05	12.07	11.89	0.71	3.516	3.492	1.875	11.14	3.512	3.498	1.40	9.92	9.80	3.48	1.874	11.10	10.28
4	100	3.94	9.0	7.5	8	0.75	14.72	14.72	14.53	0.71	4.518	4.491	2.000	13.89	4.293	4.278	1.63	12.28	12.09	4.48	2.252	14.37	14.13

NOMINAL SIZE		THREADED					SPIGOT (BUTT END)													
		L					PP, PVDF													
		PVC CPVC	PP	PVDF	DIN 3442		PP	PVDF	PP	PVDF										
INCHES	mm	d1	/	t	t	L	L	d3	D1	H	H1	A	e1	e2	S1					
2-1/2	65	2-1/2-8NPT	1.26	8.46	8.39	8.35	2.953	1.496	0.272	0.142	9.648	9.606	2.28	5.24	4.96	2.83	7.87	0.35	0.24	1.89
3	80	3-8NPT	1.38	10.43	10.39	10.28	3.543	1.496	0.323	0.169	11.654	11.535	2.70	5.98	5.51	3.35	9.45	0.43	0.28	2.17
4	100	4-8NPT	1.77	14.25	14.25	14.06	4.331	1.752	0.394	0.209	13.978	13.779	3.54	8.27	7.01	4.33	11.81	0.43	0.31	2.56

Note: The shape and appearance of assembly differ a little with nominal size compared to this drawing.

## Pressure vs. Temperature (psi, water, non-shock)

NOMINAL SIZE		PVC				CPVC						PP				PVDF				
		30° F 70° F	71° F 105° F	106° F 120° F	121° F 140° F	30° F 70° F	71° F 105° F	106° F 120° F	121° F 140° F	141° F 175° F	176° F 195° F	- 5° F 85° F	86° F 120° F	121° F 140° F	141° F 175° F	- 5° F 70° F	71° F 105° F	106° F 140° F	141° F 175° F	176° F 210° F
INCHES	mm																			
1/2-2	15-50	230	170	150	30	230	170	150	120	75	55	150	110	90	55	230	185	150	115	85
2-1/2	65	230	170	150	NA	230	170	150	120	75	55	150	95	70	40	230	185	150	115	85
3	80	230	170	150	NA	230	170	150	85	55	40	150	95	70	40	230	185	150	100	70
4-6	100-150	150	150	150	NA	150	150	150	85	55	40	150	95	70	40	150	150	150	100	70

## Sample Specification

All Type-21/21A ball valves, sizes 1/2" to 4", shall be of true union design with two-way blocking capability. All O-rings shall be EPDM or FKM with PTFE seats. PTFE seats shall have elastomeric backing cushion of the same material as the valve seals. Stem shall have double O-rings and be of blowout-proof design. The valve handle shall double as carrier removal and/or tightening tool. ISO mounting pad shall be integrally molded to valve body for actuation. PVC conforming to ASTM D1784 Cell Classification 12454A, CPVC conforming to ASTM D1784 Cell Classification 23567-A, PP conforming to ASTM D4101 Cell Classification PP0210B67272 and PVDF conforming to ASTM D3222 Cell Classification Type II. The ball valves, except PP, shall have a pressure rating of 230psi for sizes 1/2" to 3" and 150psi for 4" (150psi for PP, all sizes) at 70° F. Type-21/21A ball valves must carry a two year guarantee, as manufactured by Asahi/America, Inc.

## Caution

- Do not use ball valves where media has suspended particles. Use the following valves:
  - Butterfly valves – PVDF disc is most abrasion resistant. Make sure of chemical compatibility.
  - Diaphragm valves – Elastomeric diaphragm is designed for handling suspended particles.
- Volatile fluids such as sodium hypochlorite (NaClO) and hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) could be trapped and gasified within the valve. We can provide you with a Type-21 ball valve with a vented ball to relieve pressure build-up inside the valve.

## Troubleshooting

### What if the fluid still flows when valve is closed?

- Carrier is not properly tightened. Tighten it.
- PTFE seat is damaged or worn. Replace seat.
- Foreign material is caught between ball and PTFE seat. Remove material and clean.
- Ball is damaged or worn. Change ball.

### What if fluid leaks outside of valve?

- Union nut not properly tightened. Retighten.
- Carrier is not properly tightened. Thread it in firmly.
- Carrier or face O-ring is damaged, worn, or missing. Replace O-ring.

### What if handle does not rotate smoothly?

- Foreign material has formed on the ball or seat. Clean both.
- Internal part(s) chemically attacked or swollen. Refer to Asahi/America Chemical Resistance Chart for compatibility. Replace part(s) as required.
- Carrier overtightened. Retighten properly.

### What if handle rotates too freely?

- Stem is damaged. Replace stem.
- Handle is not engaged with stem. Disassemble and reengage. Inspect.
- Engaging part of stem and/or ball is damaged. Change stem and/or ball.

## Cv Values

## Weight (lbs.)

NOMINAL SIZE		Cv	NOMINAL SIZE		SOCKET	FLANGED
INCHES	mm		INCHES	mm	THREADED	
1/2	15	14	1/2	15	0.44	1.10
3/4	20	29	3/4	20	0.66	1.54
1	25	47	1	25	1.1	2.70
1-1/4	32	72	1-1/4	32	1.54	3.30
1-1/2	40	155	1-1/2	40	2.64	4.40
2	50	190	2	50	4.4	8.15
2-1/2	65	365	2-1/2	65	6.17	8.80
3	80	410	3	80	9.7	13.00
4	100	680	4	100	24.00	26.67

## Caution

- Never remove valve from pipeline under pressure.
- Always wear protective gloves and goggles.
- Watch out for trapped fluid in valve. It is safe to close valve before removing it from the pipeline.

# Part Numbers

All part numbers for Asahi/America products are seen digits long. In general, the first four digits specify the product and the last three digits specify the size. In this catalog, part numbers will be referenced with the first four digits followed by "\*\*\*", signifying that the size code should follow. The Part Numbers table below defines the three digit code for various valve sizes.

Nominal Size (inches)	Asahi/America Part Number	Nominal Size (inches)	Asahi/America Part Number
3/8	****003	5	****050
1/2	****005	6	****060
3/4	****007	8	****080
1	****010	10	****100
1-1/4	****012	12	****120
1-1/2	****015	14	****140
2	****020	16	****160
2-1/2	****025	18	****180
3	****030	20	****200
4	****040	24	****240

## Type-21/21A Ball Valves

Body	Elastomer	Connection	1/2" - 2"	2-1/2" - 6"
PVC	EPDM	Soc	1601***	1602***
PVC	EPDM	Thd	1601***	1603***
PVC	EPDM	Flg	1604***	1604***
PVC	FKM	Soc	1605***	1606***
PVC	FKM	Thd	1605***	1607***
PVC	FKM	Flg	1608***	1608***
CPVC	EPDM	Soc	1609***	1610***
CPVC	EPDM	Thd	1609***	1611***
CPVC	EPDM	Flg	1612***	1612***
CPVC	FKM	Soc	1613***	1614***
CPVC	FKM	Thd	1613***	1615***
CPVC	FKM	Flg	1616***	1616***
PP	EPDM	DIN Soc	1638***	1638***
PP	EPDM	IPS Soc	1618***	1618***
PP	EPDM	Thd	1619***	1619***
PP	EPDM	Butt	1620***	1620***
PP	EPDM	Flg	1621***	1621***
PP	FKM	DIN Soc	1652***	1652***
PP	FKM	IPS Soc	1622***	1622***
PP	FKM	Thd	1623***	1623***
PP	FKM	Butt	1624***	1624***
PP	FKM	Flg	1625***	1625***
PVDF	FKM	DIN Soc	1666***	1666***
PVDF	FKM	IPS Soc	1626***	1626***
PVDF	FKM	Thd	1627***	1627***
PVDF	FKM	Butt	1628***	1628***
PVDF	FKM	Flg	1629***	1629***

## Type-23 Multiport® Ball Valves

Body	Elastomer	Connection	1/2" - 4"
PVC	EPDM	Soc	2510***
PVC	EPDM	Thd	2511***
PVC	EPDM	Flg	2512***
PVC	FKM	Soc	2513***
PVC	FKM	Thd	2514***
PVC	FKM	Flg	2515***
CPVC	EPDM	Soc	2516***
CPVC	EPDM	Thd	2517***
CPVC	EPDM	Flg	2518***
CPVC	FKM	Soc	2519***
CPVC	FKM	Thd	2520***
CPVC	FKM	Flg	2521***
PP	EPDM	DIN Soc	2522***
PP	EPDM	IPS Soc	2523***
PP	EPDM	Thd	2524***
PP	EPDM	Butt	2525***
PP	EPDM	Flg	2526***
PP	FKM	DIN Soc	2527***
PP	FKM	IPS Soc	2528***
PP	FKM	Thd	2529***
PP	FKM	Butt	2530***
PP	FKM	Flg	2531***
PVDF	FKM	DIN Soc	2532***
PVDF	FKM	IPS Soc	2533***
PVDF	FKM	Thd	2534***
PVDF	FKM	Butt	2535***
PVDF	FKM	Flg	2536***