



Chemical Resistant Mechanical

Plumbing System

The SPA Mechanical System is a complete corrosive resistant plumbing system. All fittings are injection moulded and the pipes are extruded from virgin grade polypropylene in carbon black colour. It is a non-pressure system specially designed for laboratory and industrial drainage where mixtures of acids and alkaline base and solvents are involved.

Pipe Size

Nominal internal diameter	38mm	51mm	76mm	102mm
Nominal external diameter	48.30mm	60.30mm	89.00mm	114.30mm

All pipe produces in nominal internal diameters of 38mm, 51mm, 76mm and 102mm

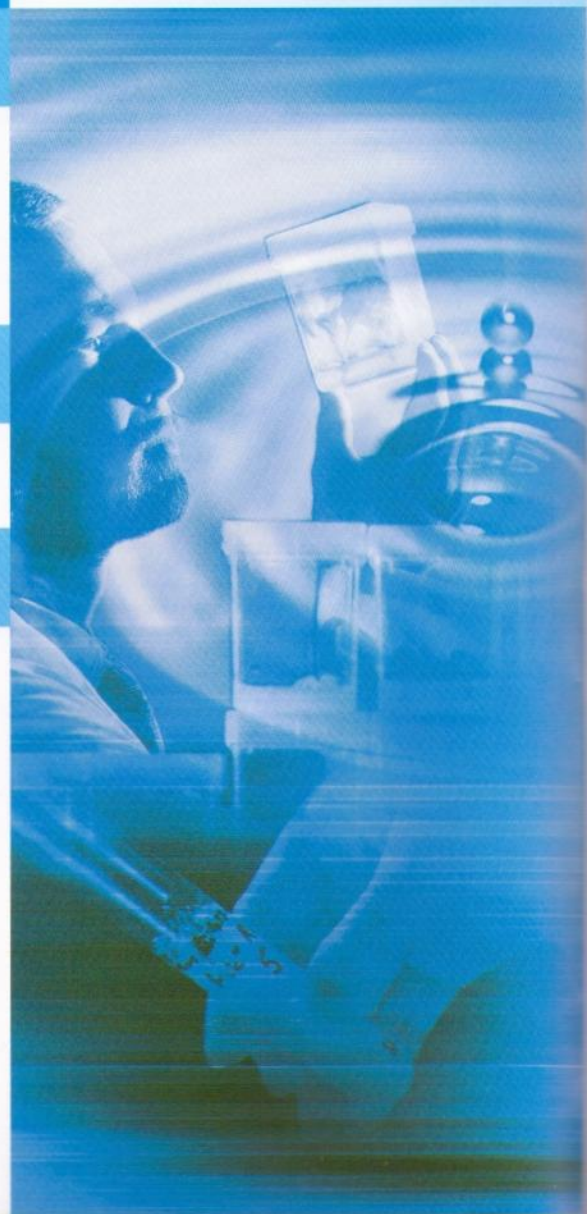
Chemical Resistance

SPA products are resistant to the chemical listed in CP312: Part 1: 1073

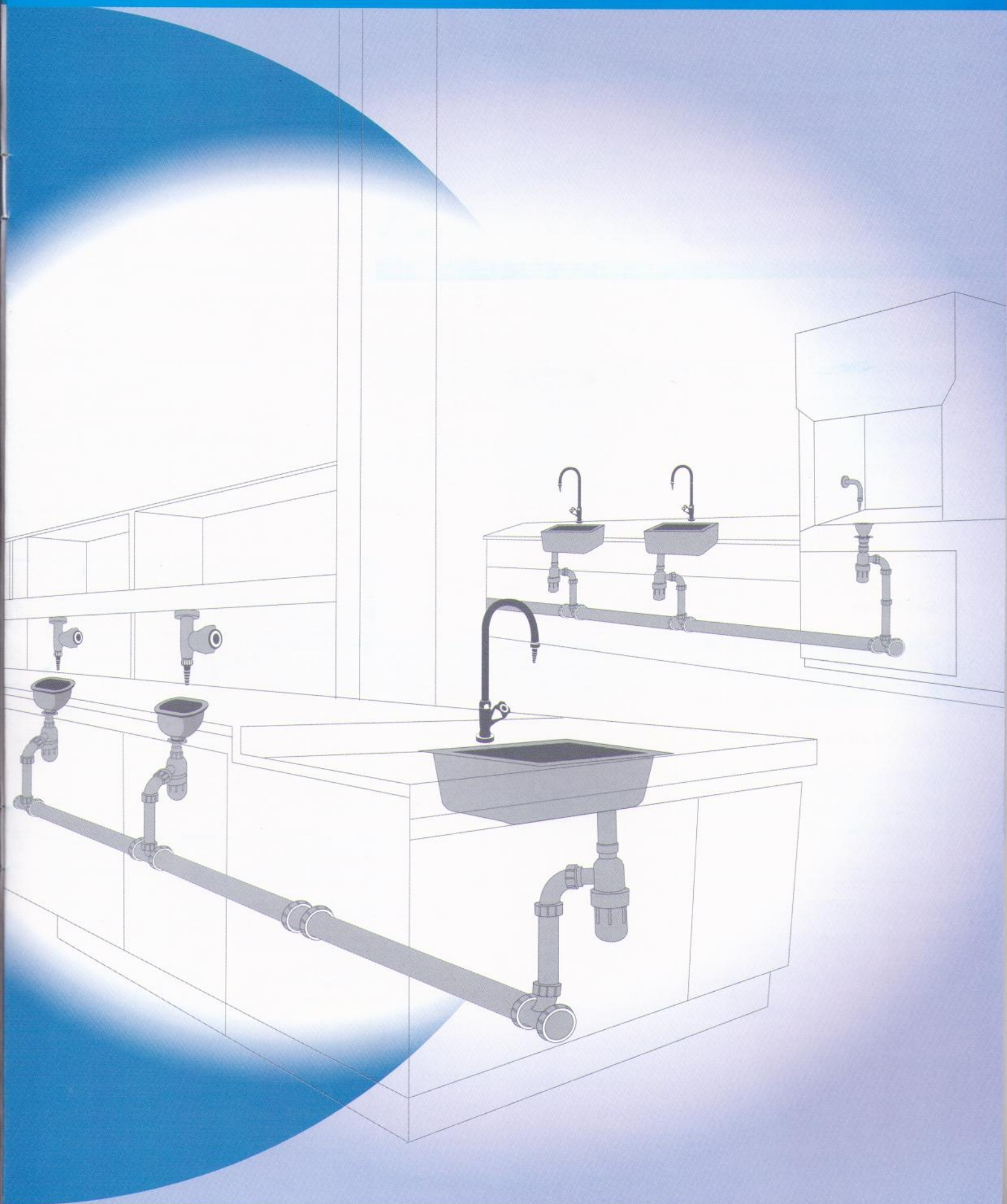
Ratings

- 1) High Resistance - All materials belonging to this class are completely or almost completely inert when used with the specified chemical at the specified concentration / temperature levels.
- 2) Limited Resistance - All materials belonging to this class are partially attacked by the specified chemicals at the specified concentration / temperature levels. Life expectancy is thus shortened and it is recommended to use a higher safety factor than that adopted for Class 1 materials.
- 3) No Resistance - All materials in this class are severely attacked by the specified chemicals at the specified concentration / temperature levels. They should, therefore, not be used.

The absence of any class indication for any given materials, signifies the absence of data for such material(s) with respect to the specific chemical(s), temperature(s) and concentration(s).



Resistance Polypropylene



Chemical Flexible Connector

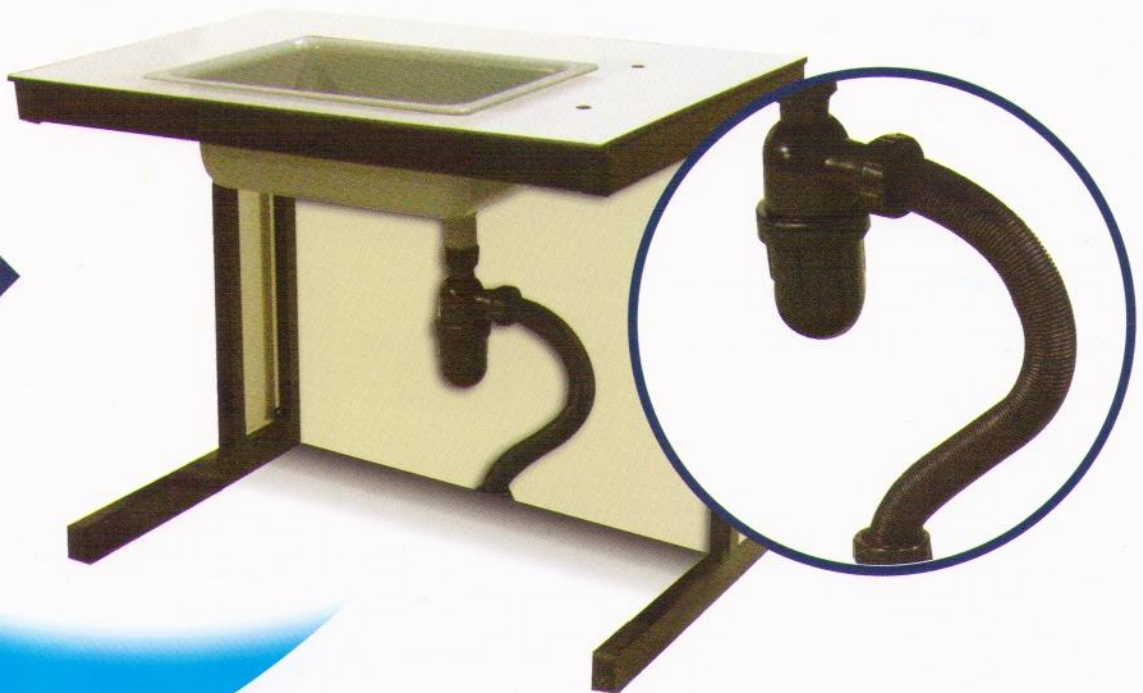
Resistance Polypropylene

Before ▶



- Waste a lot of time and use more fittings to make a joint under the sink ▪

After ▶



- Save time and cost by using SPA flexible connector ▪
(It is ideal for underbench and mobile fumecupboard use.)

Resistance Chart

Chemicals	PP					
	Temp. °C	20	40	60	80	100
		Temp. °F	68	104	140	176
A						
Acetaldehyde	2	3				
Acetaldehyde Aqueous, 40%	1	1	1	2	3	
Acetamide	1					
Acetic Acid, 60%	1	1	1	2	2	
Acetic Acid glacial, 100%	1	2	2		3	
Acetic Anhydride	1	2	2		3	
Acetone, pure	1	1	1			
Acetonitrile	1					
Acetophenone	1		3			
Acetyl Chloride	1					
Acetylene Gas, 100%	1					
Acrylonitrile	1		1			
Acrylonitrile	2					
Adipic Acid, Sat'd	1	1	1	1	1	
Alcohols	1					
Allyl Alcohol, 96%	1	1	1		1	
Aluminium Acetate, Sat'd	1					
Aluminium Ammonium	1					
Aluminium Bromide	1					
Aluminium Chloride, Sat'd	1	1	1	1	2	
Aluminium Fluoride, Sat'd	1					
Aluminium Hydroxide, Sat'd	1					
Aluminium Nitrate, Sat'd	1					
Aluminium Oxochloride	1					
Aluminium Potassium Sulfate, Sat'd	1					
Aluminium Sulfate, Sat'd	1	1	1	1	1	
Ammonia Gas	1					
Ammonia Gas, Cold	1	1	1			
Ammonia Liquid	1					
Ammonium Acetate, Sat'd	1	1	1	1	1	
Ammonium Benzoate	1					
Ammonium Bifluoride, Sat'd	1					
Ammonium Carbonate, Sat'd	1	1	1	1	1	
Ammonium Chloride, Sat'd	1		1		2	
Ammonium Fluoride, 25%	1		1			
Ammonium Hydroxide	1	1	1	1	1	
Ammonium	1					
Ammonium Nitrate, Sat'd	1		1		1	
Ammonium Persulfate	1					
Ammonium Phosphate, Dibasic	1	1	1	1	1	
Ammonium Phosphate, Monobasic	1	1	1	1	1	
Ammonium Phosphate	1	1	1	1	1	
Ammonium Potassium	1					
Ammonium Sulfate	1	1	1	1	1	
Ammonium Sulfide, Dilute	1		1			
Ammonium Thiocyanate	1					
Ammonia Acetate, Sat'd	1					
Ammonia Gas	1					
Ammonia Liquid	1					
Amyl Acetate	2	2				
Amyl Alcohol, Pure	1	1	1	1	1	
Amyl Chloride	3					
Aniline	2					
Aniline Chlorohydrate	2		2		3	
Aniline Hydrochloride	1	1	2			
Anthraquinone	1					
Anthraquinone Sulfonic	1					
Antimony Trichloride	1	1	1			
Aqua Regia	2	3	3	3	3	
Arsenic Acid, 80%	1	1	1	1	2	
Asphalt	1					
Automotive brake Fluid	1					

Chemicals	PP					
	Temp. °C	20	40	60	80	100
		Temp. °F	68	104	140	176
B						
Barium Carbonate, Sat'd	1		1			
Barium Chloride, Sat'd	1			1		
Barium Hydroxide, Sat'd	1	1	1			
Barium Nitrate, Sat'd	1					
Barium Sulfate, Sat'd	1			1		
Barium Sulfide, Sat'd	1					
Beer	1	1	1			
Beet Sugar Liquors	1					
Benzaldehyde	3			3		
Benzaldehyde, 10%	1					
Benzene	2		3		3	
Benzene Sulfonic Acid, 10%	1	2	3			
Benzenesulfonic Acid, 10%	1					
Benzoic Acid, All	1	1	1	1	1	
Benzyl Alcohol	1	1	2			
Bismuth Carbonate	1					
Black Liquor	1					
Bleach, 12% Active Cl2	1					
Borax, Sat'd	1	1	1	1	1	
Boric Acid, 10%	1	1	1	1	1	
Brine, Sat'd	1	1	1	1	1	
Bromic Acid	3					
Bromine Liquid	3		3		3	
Bromine Vapor, 25%	3					
Butadiene	1	1	1			
Butadiene, 50%	3					
Butadiene Gas	1					
Butane, 50%	1					
Butane, Gas	1					
Butyl Acetate	2					
Butyl Acrylate Pure	3					
Butyl Alcohol	1		1		2	
Butyl Bromide					1	
Butyl Ether	3					
Butyl Phenol	3		3			
Butyric Acid, Pure	1	1	2			
C						
Calcium Bisulfide	1	1	1			
Calcium Bisulfite	1	1	1			
Calcium Carbonate	1	1	1			
Calcium Chlorate	1					
Calcium Chloride, Sat'd	1	1	1		2	
Calcium Hydroxide, 30%	1	1	1			
Calcium Hypochlorite	1	1				
Calcium Nitrate, Sat'd	1					
Calcium Sulfate	1					
Calcium Sulfide, Sat'd	1					
Camphor Oil	3	3	3			
Carbon Dioxide, Pure Anhydrous	1	1	1	1		
Carbon Dioxide, Pure Moist	1	1	1	1		
Carbon Disulfide	1		3		3	
Carbon Monoxide, Gas	1	1	1			
Carbon Tetrachloride	3	3	3			
Caustic Potash, 50%	1	1	1	1	1	
Caustic Soda, 50%	1	1	1	1	1	
Chloral Hydrate, All	2					
Chloramine (Diluted)	1					
Chloric Acid, 20%	1		3	3	3	
Chlorinated Water, 0.3% (Sat'd)	2					
Chlorine, Liquid	3	3	3			
Chloroacetic Acid, 50%	1	1	1			
Chlorobenzene, Dry	3	3	3			

Resistance Chart

Chemicals	PP					
	Temp. °C	20	40	60	80	100
		°F	68	104	140	176
C Cont'd						
Chloroform, Dry	2		3		3	
Chlorosulfonic Acid	3	3	3	3	3	
Chrome Alum	1	1	1		2	
Chromic Acid, 50%	2		3	3	3	
Cider	1					
Coconut Oil	1	1	1			
Compressed Air	2					
Copper Chloride, Sat'd	1	1	1			
Copper Cyanide	1	1	1			
Copper Fluoborate	3	3	3			
Copper Nitrate, 30%	1	1	1			
Copper Salts	1	1	2			
Copper Sulfate, Sat'd	1	1	1			
Cottonseed Oil	1	1	1			
Creosols	1					
Cresol, 50%	1					
Cresol, 90%	2					
Cyclohexane	1		2			
Cyclohexanol	1	1	2			
Cyclohexanone	1	2	3	3	3	
D						
Decahydronaphthalene	3	3	3			
Detergent, Water Solution	1	1	1	1		
Di(Butoxyethyl) Phthalate	3	3				
Dibutyl Phthlate	1	2	2			
Dibutyl Sebacate	1					
Dichloro Ethane	1					
Dichlorobenzene	2					
Dichloroethylene	2					
Diethyl Ether	1	1	1			
Diglycolic Acid, Sat'd	1	1	1			
Diisobutyl Ketone	1					
Dimethylamine	1		2			
Dimethylformamide	1					
Dinonyl Phthalate	1					
Diocetyl Phthalate	1	2	2			
Dioxane	2	2	2			
E						
Ethers	3	3	3			
Ethyl Acetate	1	2	2	3	3	
Ethyl Alcohol	1	1	1	1	1	
Ethyl Benzene	2					
Ethyl Ether	3	3	3			
Ethylene Chloride	2					
Ethylene Diamine	1					
Ethylene Glycol, 100%	1	1	1	1	1	
Ethylene Oxide	2					
F						
Fatty Acids	1	1	1			
Fatty Alcohol Sulfamate	1	1	2			
Ferric Chloride	1	1	1			
Ferric Chloride, Sat'd	1	1	1	1	1	
Ferric Sulfate	1					
Ferrous Chloride, Sat'd	1					
Ferrous Sulfate	1					
Fluorine Gas (Dry), 100%	3	3	3			
Fluosilicic Acid, 30%	1	1	1			
Formaldehyde	1	1	1			
Formamide	1	1	1			
Fruit Juice, Pure	1	1	1	1	1	
Furfuryl Alcohol	1		2			
G						
Gasoline	3	3	3	3	3	

Chemicals	PP					
	Temp. °C	20	40	60	80	100
		°F	68	104	140	176
G						
Gelatin	1	1	1			
Glucose	1	1	1	1	1	
Glycerine	1	1	1	1	1	
Glycine, Aqueous	1	1	1	1	1	
Glycolic Acid, Sat'd	1					
H						
Heptane	1		2			
n-Hexane	1		2			
Hydrazine Hydrate	1	1	1			
Hydrobromic Acid, 50%	1	1	1			
Hydrochloric Acid, 25%	1	1	1	1	1	
Hydrocyanic Acid	1	1	1			
Hydrofluoric Acid, 60%	1		3		3	
Hydrogen Peroxide, 30%	1	1	1			
Hydrogen Sulfide, Dry	1	1	1			
Hydroxylamine Sulfate	1	1	1			
I						
Iodine	1					
Isobutane	2		3			
Isooctane	1		2			
Isopropyl Acetate	1	1	1	1	1	
Isopropyl Alcohol	1	1	1			
Isopropyl Ether	2		3			
L						
Lactic Acid, 10%	1	1	1	1	1	
Lanolin	1	1	1			
Lead Acetate, Sat'd	1		2	2	2	
Linseed Oil	1	1	1	1	1	
Liqueurs	1					
M						
Magnesium Carbonate	1	1	1			
Magnesium Chloride, Sat'd	1	1	1		2	
Magnesium Hydroxide	1	1	1	1		
Magnesium Nitrate	1	1	1			
Magnesium Salts	1	1	1	1	1	
Malic Acid	1					
Mercuric Chloride, Sat'd	1	1	1			
Mercuric Cyanide, Sat'd	1	1	1			
Mercurous Nitrate, Sat'd	1	1	1			
Mercury	1	1	1			
Mercury Salts	1	1	1			
Methane	1					
Methyl Acetate	1	1	1			
Methyl Alcohol	1		2		2	
Methyl Amine	1		2			
Methyl Bromide	3	3	3			
Methylene Chloride	3		3		3	
Methylsulfuric Acid	3		3		3	
Milk	1	1	1	1	1	
Molasses	1	1	1	1	1	
Morpholine	1	1	1			
N						
Naphtha	1	3				
Naphthalene	1					
Nickel Chloride, Sat'd	1	1	1	1	1	
Nickel Nitrate	1	1	1		2	
Nickel Sulfate, Sat'd	1	1	1			
Nitric Acid, 60%	2		3		3	
Nitrobenzene	1		2			
Oleic Acid	1	1	2			
Olive Oil	1	1	1	1		
Oxygen Gas	3	3	3			
Ozone	2	3	3			

Resistance Chart

Chemicals	PP					
	Temp. °C	20	40	60	80	100
		°F	68	104	140	176
P Cont'd						
Palmitic Acid	2					
Palmitic Acid, 10%				3		
Paraffin				1		
Paraffin Emulsion	1	1	2			
Perchloric Acid, 70%	1					
Perchloroethylene	2					
Petroleum	1	2	2			
Phenol, 90%	1	1	1			
Phenyl Hydrazine	2	2	2			
Phosgene Gas	2					
Phosgene Liquid	2					
Phosphoric Acid, 50%	1	1	1	1	1	
Phosphorous Pentoxide	1					
Phosphorous Trichloride	1		2			
Phosphorous Oxychloride	1		2			
Phosphorous Pentachloride	1		2			
Potassium Bicarbonate	1	1	1	1	1	
Potassium Borate	1	1	1			
Potassium Bromate	1	1	1	1	1	
Potassium Bromide	1	1	1			
Potassium Carbonate	1					
Potassium Chlorate	1	1	1			
Potassium Chloride	1	1	1	1	1	
Potassium Chromate	1	1	1			
Potassium Cyanide	1	1	1			
Potassium Ferricyanide	1	1	1			2
Potassium Fluoride	1	1	1			
Potassium Iodide	1	1	1			
Potassium Nitrate	1	1	1			
Potassium Perborate	1					
Potassium Perchlorate	1	1	1			
Potassium Permanganate, 10%	1	1	1	1		
Potassium Persulfate	1	1	1			
Potassium Sulfate	1	1	1			
Propane	1					
1-Propanol	1	1	1			
Propargyl Alcohol	1	1	1			
Propionic Acid, 50%	1	1	1			
Propyl Alcohol	1	1	1			
Propylene Oxide	1					
Pyridine	2	2	2			
S						
Sea Water	1	1	1	1	1	
Silicic Acid	1	1	1			
Silicone Oil	1	1	1			
Silver Cyanide	1	1	1			
Silver Nitrate	1	1	1			2
Soaps	1	1	1			
Sodium Acetate, Sat'd	1	1	1	1	1	
Sodium Benzoate	1	1	1			
Sodium Bicarbonate	1	1	1	1		
Sodium Bichromate, Sat'd	1	1	1	1	1	
Sodium Bisulfate	1	1	1			
Sodium Bisulfite	1	1	1			2
Sodium Bromide, Sat'd	1	1	1			
Sodium Chlorate, Sat'd	1	1	1			
Sodium Chloride	1	1	1	1		
Sodium Chromate	1	1				
Sodium Fluoride	1					
Sodium Hypochlorite	1					
Sodium Iodide	1					
Sodium Nitrate, Sat'd	1	1	1			

Chemicals	PP					
	Temp. °C	20	40	60	80	100
		°F	68	104	140	176
Sodium Nitrite, Sat'd	1					
Sodium Oxalate	1					
Sodium Perborate	1					
Sodium Phosphate	1	1	1	1	1	1
Sodium Sulfate, Sat'd	1	1	1	1		
Sodium Sulfide	1	1	1			
Sodium Sulfite	1	1	1			
Sodium Thiosulfate	1	1	1			
Stannous Chloride, 15%	1	1	1			
Stearic Acid, 100%	1	2	2			
Succinic Acid	1	1	1			
Sugar Syrup	1	1	1	1		
Sulfur Dioxide Gas, Dry	1	1	1			3
Sulfuric Acid, 51% to 60%	1	1	1			
Sulfuric Acid, 71% to 80%	1	1	2			
Sulfurous Acid	1	1	1			
T						
Tannic Acid	1	1	1			
Tartaric Acid	1	1	1			
Tetrachloroethane	2		3			
Tetraethyl Lead	1					
Tetrahydrofuran	2		3			3
Thionyl Chloride	3					
Toluene	2	3	3	3	3	3
Transformer Oil	1		2			
Tributyl Phosphate	1	1	1			
Trichloroacetic Acid, 50%	1	1	1			
Trichloroethylene	3	3	3			
Tricresyl Phosphate	1		2			
Triethanolamine	1					
Trioctyl Phosphate	1					
U, V, W						
Urea	1	1	1			
Urine	1	1	1			
Vaseline	1		2			
Vegetable Oil	1	1	2			
Vinegar	1	1	1	1		
Vinyl Acetate	1					
Water, Deionized	1	1	1	1	1	
Whiskey	1					
Wines	1	1	1			
X, Y, Z						
Xylene	1	1	2			
Yeast	1	1	1			
Zinc Chloride	1	1	1			
Zinc Nitrate	1	1	1			
Zinc Salts	1	1	1			
Zinc Sulfate	1	1	1			

Mechanical Chemical Resistant Plumbing

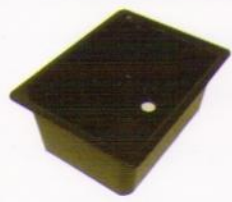
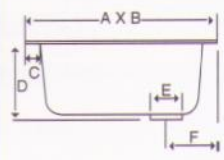
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		A	418	548	560	548 x 398 x 235mm (Black)	PP001-101
		B	317	398	428	418 x 317 x 160mm (Black)	PP001-102
		C	25	35	30	560 x 428 x 260mm (Black)	PP001-103
		D	160	235	260	560 x 428 x 260mm (Grey)	PP001-303
		E	73	68	73		
		F	133	147	143		


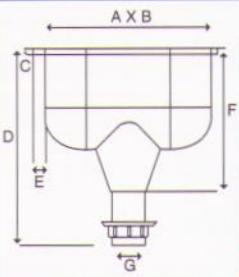
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		Dim.	175x102			264x111
		A	175	264	175 x 102mm	PP025-001
		B	102	111	264 x 111mm	PP025-002
		C	6	6		
		D	216	225		
		E	6	13		
		F	143	161		
		G	1 1/2" BSP	1 1/2" BSP		

Image	Tech. Drawing	Dimension		Description	Code. No	
		Dim.	102mm			168mm
		A	102	168	168mm Dia.	PP026-001
		B	5	8	102mm Dia.	PP026-002
		C	136	165		
		D	6	11		
		E	76	114		
		F	1 1/2" BSP	1 1/2" BSP		


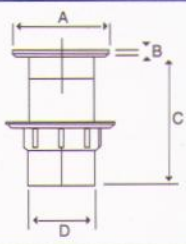



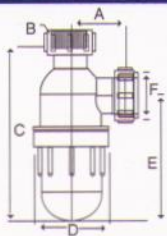

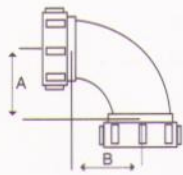
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		Dim.	38 x 76mm Dia.		
		A	73	38 x 76mm Dia. (Black)	PP050-013
		B	3	38 x 76mm Dia. (Grey)	PP050-313
		C	104		
		D	1 1/2" BSP		


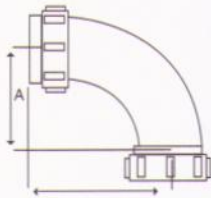
Image	Tech. Drawing	Dimension		Description	Code. No
		Dim.	38mm		
		A	0.6m	38mm Flexible Connector	PP080-001
			1m	0.6m	PP080-002
				1m	(It is ideal for underbench and mobile fumecupboard use.)


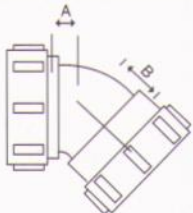
Mechanical Chemical Resistant Plumbing

		Dim.	38mm	Anti-Siphon Bottle Traps 38mm	Code. No PP100-010
		A	86		
		B	1 1/2" BSP		
		C	203		
		D	89		
		E	143		
		F	1 1/2" Mech Thrd		

		Dim.	2.3 litre	Dilution Recovery Traps 2.3 litre	Code. No PP100-012
		A	86mm		
		B	325mm		
		C	270mm		
		D	133mm		
		E	1 1/2" BSP		
		F	1 1/2" Mech Thrd		

		Dim.	38	51	76	102	Sweep Bends 38mm 51mm 76mm 102mm	PP150-010 PP150-020 PP150-030 PP150-040
		A	54	62	74	98		
		B	54	62	74	98		

		Dim.	38	51	76	102	Loose Nut Sweep Bends 38mm 51mm 76mm 102mm	PP175-010 PP175-020 PP175-030 PP175-040
		A	54	62	74	98		
		B	76	93	133	167		

		Dim.	38	51	76	102	Slow Bends 38mm 51mm 76mm 102mm	PP200-010 PP200-020 PP200-030 PP200-040
		A	15	17	41	45		
		B	15	17	41	45		

Mechanical Chemical Resistant Plumbing


Image	Tech. Drawing	Dimension				Description	Code. No	
		Dim.	38	51	76			102
		A	15	17	41	45	38mm	PP225-010
		B	44	48	102	102	51mm	PP225-020
							76mm	PP225-030
							102mm	PP225-040

Image	Tech. Drawing	Dimension					Description	Code. No			
		Dim.	38	51	51x38	76			102		
		A	60	52	51	75			95	38mm	PP250-010
		B	51	71	71	90			130	51mm	PP250-020
		C	51	71	71	90			130	51 x 38mm	PP250-021
D	111	123	102	165	225	76mm	PP250-030				
						102mm	PP250-040				

Image	Tech. Drawing	Dimension				Description	Code. No		
		Dim.	38	51	76			102	
		A	3	3	6	6	38mm	PP275-010	
								51mm	PP275-020
								76mm	PP275-030
								102mm	PP275-040

Image	Tech. Drawing	Dimension			Description	Code. No			
		Dim.	51x38	76x38			76x51		
		A	40	60			57	51 x 38mm	PP300-021
								76 x 38mm	PP300-031
								76 x 51mm	PP300-032
								102 x 38mm	PP300-041
				102 x 51mm	PP300-042				
				102 x 76mm	PP300-043				


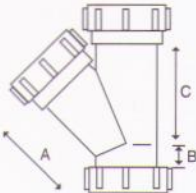
Image	Tech. Drawing	Dimension		Description	Code. No	
		Dim.	38mm			51mm
		A	1 1/2" BSP			2" BSP
B	6	6	51mm	PP325-020		


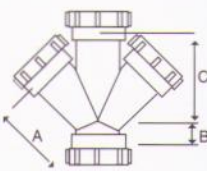
Mechanical Chemical Resistant Plumbing

		Dim.	38mm			F.I x M.I Reducer 1 1/4" F.I x 1 1/2" BSP M.I	PP350-010
		A	1 1/4" BSP				
		B	1 1/2" BSP				



		Dim.	38mm	51mm	M.I to Pipe Couplers 38mm 51mm	PP375-010 PP375-020
		A	1 1/2" BSP	2" BSP		
		B	6	6		


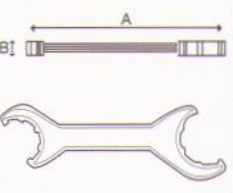
		Dim.	38	51	76	102	Blanking-Off Plug 38mm 51mm 76mm 102mm	PP400-010 PP400-020 PP400-030 PP400-040
		A	47	60	95	57		
		B	21	28	44	120		


		Dim.	38	51	76	102	Single Wyes 38mm 51mm 76mm 102mm	PP425-010 PP425-020 PP425-030 PP425-040
		A	64	76	146	171		
		B	10	13	41	41		
		C	86	105	117	222		


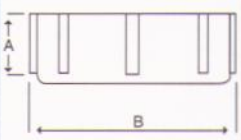
		Dim.	38	51	76	102	Double Wyes 38mm 51mm 76mm 102mm	PP450-010 PP450-020 PP450-030 PP450-040
		A	64	76	146	171		
		B	10	13	41	41		
		C	86	105	117	222		


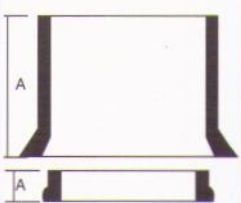
Mechanical Chemical Resistant Plumbing

	Tech. Drawing	Dimension	Description	Code. No
			Cutting Tool 38mm 51mm 76mm 102mm	PP475-010 PP475-020 PP475-030 PP475-040

	 	Dim.	51x38	102x76	Spanner 51 x 38mm 102 x 76mm	PP500-021 PP500-043
		A	286	420		
		B	13	13		

	 	Dim.	38	51	76	102	Polypropylene Pipe 38mm (4m) 51mm (3m) 51mm (4m) 76mm (3m) 76mm (4m) 102mm (3m) 102mm (4m)	PP900-014 PP900-023 PP900-024 PP900-033 PP900-034 PP900-043 PP900-044
		A	4m	3/4m	3/4m	3/4m		

	 	Dim.	38	51	76	102	Nuts 38mm 51mm 76mm 102mm	PPC000810 PPC000820 PPC000830 PPC000840
		A	21	25	33	35		
		B	67	83	134	162		

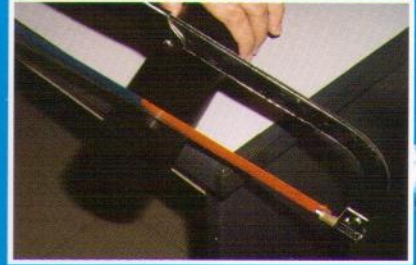
	 	Dim.	38	51	76	102	Olive 38mm 51mm 76mm 102mm	PPC000910 PPC000920 PPC000930 PPC000940
		A	7	7	46	58		

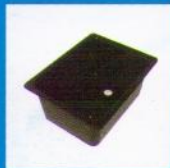
Making A

Polypropylene Mechanical

Pipe Joint

- 1) Cut or saw the pipe to the required length using a rotary plastic pipe cutter or a hand saw. It is essential that all burrs and loose material be removed. It is important to ensure that the finish end is square and clean.
- 2) To achieve full joint integrity it is necessary that a groove, into which the olive locates, be cut round the pipe with cutting tool. Insert the pipe into the cutting tool to its total depth and adjust the depth cutting blade to half depth and revolve the cutting tool anti clockwise round the pipe. Then, adjust to full depth, again revolving it anti clockwise. When completed retract the blade and remove the tool making sure that any swarf created by the groove action is removed. Never try to cut the groove with the blade at full cut first time and rotate the tool anti clockwise.
- 3) The yellow olive should not be boiled or heated during installation as it can cause damage to the product's functionality.
- 4) To assemble the joint places the nut onto the pipe and slide the yellow olive into place, with the tongue locating into groove in the pipe.
- 5) Loosely assemble the joint and proceed to hand tighten the knurled nut. Using two SPA's spanners, further tighten the nut to complete the joint.





spaTM


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