

Insulators, Washers, & Spacers

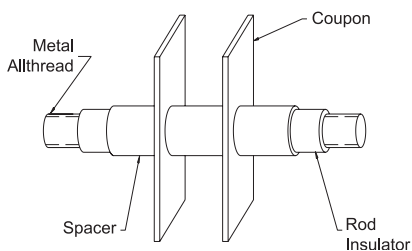
Metal Samples makes a variety of insulators, washers, and spacers used to isolate test specimens. We also make insulator kits (P/N KR5102) that contain an assortment of washers, screws, nuts, and stems. These kits are designed for field use when a variety of insulators are needed. The chart shown here is a general guide to material applications. Call for recommendations on use in hazardous or severe environments.

Material vs. Environment

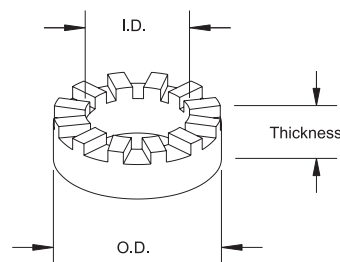
Material	Acids		Alkalies		Organic Solvents	Water Absorption % 24 hrs.	Oxygen and Ozone	High Vacuum	Ionizing Radiation	Temperature Resistance		Tensile Strength lb/in
	Weak	Strong	Weak	Strong						High	Low	
Fluorocarbons TFE	Inert	Inert	Inert	Inert	Inert	0.0	Inert	-	P	550	G-275	2,500
Nylon	G	A	R	R	R	1.5	SA	-	F	300	G-70	10,000
Polyethylene (low density)	R	A-O	R	R	G	0.15	A	F	F	140	G-80	2,000
Polyethylene (high density)	R	A-O	R	R	G	0.1	A	F	G	160	G-100	4,000
Polypropylene	R	A-O	R	R	R	0.01	A	F	G	300	P	5,000
Rigid polyvinyl chloride	R	R	R	R	A	0.10	R	-	P	150	P	6,000
Phenolics	SA	A	SA	A	SA	0.6	-	-	G	400	L	7,500
Zirconia ceramics	R	R	R	R	R	0.0	R	-	-	-	-	-
Alumina ceramics	R	R	R	R	R	0.0	R	-	-	3180	-	-

R = Resistance A = Attacked SA = Slight Attack A-O = Attacked by Oxidizing Acids G = Good F = Fair P = Poor L = Little Change

Rod Insulators



Crevice Washers

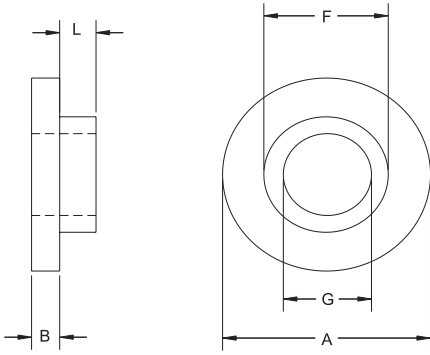


Material	P/N	OD (inches)	ID (inches)
Teflon®	04783002180015	.218	.188
	04783002960025	.296	.250
	04783003750062	.375	.250
	04783004060078	.406	.250
	04783004370093	.437	.250
	04783004370031	.437	.375
	04783005000062	.500	.375
	04783006250125	.625	.375
	04783006250078	.625	.470
	04783008750162	.875	.550

Material	P/N	Dimensions (inches)			# of Slots
		ID	OD	Thickness	
Teflon®	CW1900783	.391	.625	.250	12
	CW1902783	.265	.625	.250	12
	CW1904783	.265	.625	.100	12
Ceramic	CW1902473	.265	.625	.250	12

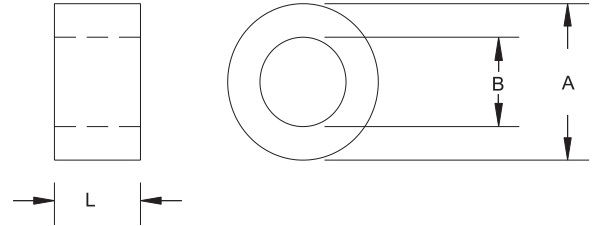
Contact our sales department for the availability of insulators, washers, and spacers not listed.

Shoulder Washers



Material	P/N	Dimensions (inches)				
		L	A	B	G	F
Ceramic	SW1402473	.050	.375	.090	.193	.250
	SW1425473	.050	.625	.125	.250	.375
TFE Glass	SW1439785	.109	.625	.094	.250	.313
Teflon®	SW1400783	.109	.625	.109	.250	.313
	SW1402783	.063	.375	.063	.188	.250
	SW1403783	.125	.625	.438	.250	.406
	SW1406783	.234	.625	.109	.250	.375
	SW1407783	.109	.625	.109	.250	.375
	SW1413783	.063	.656	.500	.250	.406
	SW1418783	.125	.641	.500	.359	.453
	SW1419783	.109	.625	.188	.250	.375
	SW1420783	.188	.625	.109	.250	.375
	SW1421783	.125	.438	.063	.188	.297
	SW1423783	.055	.625	.500	.250	.531
	SW1424783	.063	.750	.250	.250	.500
	SW1425783	.050	.625	.109	.250	.375
	SW1426783	.050	.625	.313	.250	.375
	SW1427783	.313	.500	.063	.203	.313
Nylon	SW1443709	.125	.375	.031	.188	.250
	SW1427709	.313	.500	.063	.203	.313
	SW1444709	.047	.375	.094	.188	.250

Spacers & Flat Washers



Material	P/N	Dimensions (inches)		
		L	A	B
Teflon®	ST1200783	.500	.375	.250
	ST1202783	.250	.375	.250
	ST1203783	.188	.375	.250
	ST1204783	.250	.625	.250
	ST1205783	.750	.500	.359
	ST1206783	.500	.500	.344
	ST1207783	.500	.625	.375
	ST1208783	.250	.625	.406
	ST1209783	.625	.625	.375
	ST1214783	.375	.625	.375
	ST1219783	.750	.750	.490
	ST1221783	.375	.500	.375
	ST1225783	.375	.625	.500
	ST1226783	1.00	.625	.265
	ST1231783	.125	.422	.363
	ST1232783	.375	.375	.250
	ST1253783	.062	.500	.250
	Nylon	09709E1000-FW0000	.047	.438
ST1240709		.062	.375	.203
ST1239709		.062	.375	.250
ST1230709		.125	.500	.313
09709E2500-FW0000		.094	.500	.250
Ceramic	ST1220473	.250	.500	.375
	ST1240473	.062	.375	.188
	ST1247473	.500	1.00	.560
	ST1248473	.125	.600	.394
	ST1249473	.125	.625	.250

Fasteners

We make a variety of fasteners in almost any material required, including:

- Brass
- 304
- 316
- Teflon®
- Nylon
- Tantalum
- HASTELLOY® C-276
- Carpenter® 20Cb3
- HASTELLOY® B-2
- Titanium
- INCONEL® alloy 600



Teflon® is a registered trademark of DuPont. HASTELLOY® is a registered trademark of Haynes International, Inc. INCONEL® alloy 600 is a registered trademark of Special Metals. Carpenter® 20Cb3 is a registered trademark of Carpenter Technologies.