

Features

- Exceptional chemical resistance with a cost-efficient replacement for FFKM seals for chemical applications.
- Temperature capability from -60°C to 205°C.
- Compliant to key global regulatory standards: FDA, USP Class VI
- Cost effective alternative to FFKM.
- Specific product recommendations for an extensive range of applications, from the simplest to the most extreme.
- Resistant to compression set and cold flow issues of solid PTFE seals.

RS PRO FEP Silicone Encapsulated O-rings



RS PRO is the own brand of RS. The RS PRO Seal of Approval is your assurance of professional quality, a guarantee that every part is rigorously tested, inspected, and audited against demanding standards. Making RS PRO the Smart Choice for our customers.

Product Description

Our FEP encapsulated 'O'-rings provide a high performance and low-cost sealing solutions for a variety of chemically demanding applications, or where regulatory compliance is particularly important.

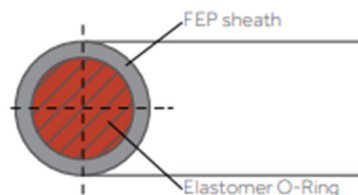
The combination of elastomers and encapsulation choice enables our encapsulated seals to achieve a combination of temperature, chemical and cost performance unrivalled by pure elastomeric solutions.

FEP encapsulated O-rings are recommended when a standard O-ring has inadequate chemical resistance for an application. They are also recommended when a solid PTFE O-ring does not have the elasticity for reliable, long term fluid sealing. They are often used where chemical resistance and or hygiene is required.

Typical Industries: Food, Chemical, Petrochemical, Pharmaceutical

General Specifications

Type	O-Ring
Material	FEP Encapsulated Silicone
Encapsulation	FEP - Fluorinated Ethylene Propylene (transparent)
Core	Silicone (Red)
Hardness	85-90 Shore A
Minimum Operating Temperature	-60°C
Maximum Operating Temperature	+205°C
Temperature Range	-60°C to +205°C (-75°F to +400°F)
Inside Diameter	Please see table below
Outside Diameter	Please see table below
Thickness	Please see table below
BS Standard	Please see table below
Compliance/Certifications	FDA, USP Class VI, EC 1935/2004 & LABS
Recommended Maximum Stretch	Maximum I.D stretch of the 'O'-ring should be 20% for Silicone core. Stretch should be evenly applied to the circumference with use of a fitting tool.

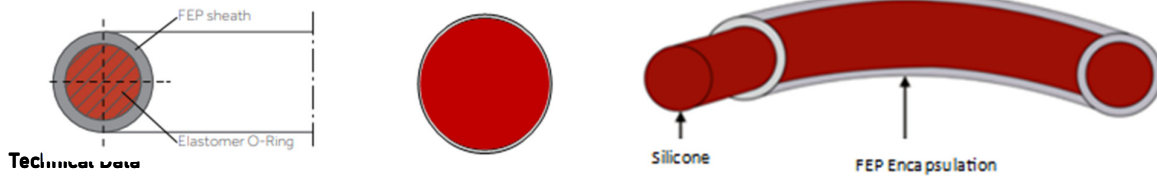


What is an Encapsulated O-ring?

FEP Encapsulated 'O'-ring seal is an 'O'-ring bound by a seamless and uniform Fluorinated Ethylene Propylene (FEP) encapsulation, which encloses an elastomeric core, completely protecting it from the media. The combination of elastomers and encapsulation choice enables our encapsulated seals to achieve a combination of temperature, chemical and cost performance unrivalled by pure elastomeric solutions. The elastomeric core provides the energising sealing force.

Silicone Inner Core

Commercially the best inner core material option, providing a lower shore hardness and greater elasticity than Viton™/FKM - an excellent material choice for the majority of applications



Technical Data

The FEP encapsulation is the essential component of the Chem-Ring® and it is resistant to practically all chemicals. Within normal application temperatures, FEP resins are vulnerable to only a few chemicals. In some instances, at or near the suggested service limit temperatures of FEP 205°C (400°F) a few chemicals at high concentrations have been reported to be reactive.

Groove Dimension Table

FEP Rings are designed to be used in all standard 'O'-ring grooves with the same housing dimensions and clearances as for standard elastomeric seals. Our recommendations for BS ISO 3601-1/AS 568 imperial standard 'O'- ring grooves are tabled here.

Cross Section	A	B Static	B Dynamic	B Pneumatic
1.78 mm 0.070"	2.36 – 2.49 mm 0.093 – 0.098"	1.42 – 1.52 mm 0.0563 – 0.060"	1.55 – 1.60 mm 0.061 – 0.063"	1.63 – 1.65 mm 0.064 – 0.065"
2.62 mm 0.103"	3.56 – 3.68 mm 0.140 – 0.145"	2.082 – 2.21 mm 0.082 – 0.087"	2.29 – 2.36 mm 0.090 – 0.093"	2.38 – 2.44 mm 0.094 – 0.096"
3.53 mm 0.139"	4.78 – 4.88 mm 0.187 – 0.192"	2.82 – 3.00 mm 0.111 – 0.118"	3.10 – 3.18 mm 0.122 – 0.125"	3.23 – 3.28 mm 0.127 – 0.129"
5.33 mm 0.210"	7.14 – 7.26 mm 0.281 – 0.286"	4.27 – 4.52 mm 0.168 – 0.178"	4.67 – 4.80 mm 0.184 – 0.189"	4.90 – 4.95 mm 0.193 – 0.195"
6.99 mm 0.275"	9.53 – 9.65 mm 0.375 – 0.380"	5.59 – 5.89 mm 0.220 – 0.232"	6.15 – 6.27 mm 0.242 – 0.247"	6.43 – 6.48 mm 0.253 – 0.255"

Degree of squeeze

- 15/22% for static applications
- 10/15% for dynamic applications
- 8/10% for pneumatic applications

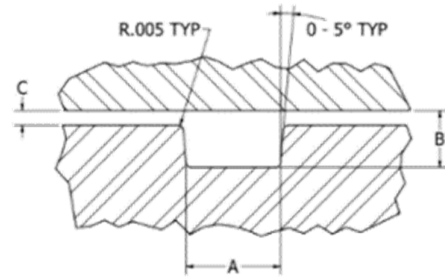
The amount of squeeze required varies with many factors, most critically, the pressure to be sealed.

Seal Extrusion Radial Clearance Details

If the radial clearance gap (C on below diagram) between the sealing surface and the groove corners are too large and the pressure exceeds the deformation limit of the 'O' ring, extrusion of the ring material can occur. When this happens, the extruded material wears or frays with cycling and can cause seal failure. There are two possible options to minimise the potential for 'O' ring extrusion.

- Preferably, close the clearance gap (C) by modifying the shaft or housing dimensions, or use backup washers or other anti-extrusion devices.
- Alternatively, use the harder, higher modulus Viton™/FKM core, at the possible expense of higher friction and greater tendency to leak at lower pressure ranges.

Recommended maximum design radial clearance gap to prevent extrusions	
Maximum Pressure	
PSI	FEP / A Silicone
100	0.381mm /0.015"
250	0.355mm /0.014"
500	0.304 mm /0.012"
750	0.254mm /0.010"
1000	0.228mm /0.009"
1500	0.152mm /0.006"
2000	0.127mm /0.005"
3000	0.076mm/0.003"



Detailed Specifications

Product Code	Inner Diameter (mm)	Outside Diameter (mm)	Thickness	BS Standard
0731823	5.29	8.85	1.78	BS009
0731824	6.07	9.63	1.78	BS010
0731825	7.65	11.21	1.78	BS011
0731826	9.25	12.81	1.78	BS012
0731828	10.82	14.38	1.78	BS013
0731829	12.42	15.98	1.78	BS014
0731830	14	17.56	1.78	BS015
0731831	15.6	19.16	1.78	BS016
0731832	17.17	20.73	1.78	BS017
0731834	18.77	22.33	1.78	BS018
0731835	20.35	23.91	1.78	BS019
0731836	21.95	25.51	1.78	BS020
0731837	23.52	27.08	1.78	BS021
0731838	25.12	28.68	1.78	BS022
0731839	26.7	30.26	1.78	BS023
0731840	28.3	31.86	1.78	BS024
0731841	29.87	33.43	1.78	BS025
0731842	31.47	35.03	1.78	BS026
0731843	33.05	36.61	1.78	BS027
0731844	34.65	38.21	1.78	BS028
0731845	37.82	41.38	1.78	BS029
0731846	41	44.56	1.78	BS030
0731847	44.17	47.73	1.78	BS031
0731848	47.35	50.91	1.78	BS032
0731850	50.52	54.08	1.78	BS033
0731851	53.7	57.26	1.78	BS034
0731852	56.87	60.43	1.78	BS035
0731853	60.04	63.60	1.78	BS036
0731854	63.22	66.78	1.78	BS037
0731856	66.4	69.96	1.78	BS038
0731857	69.57	73.13	1.78	BS039
0731858	72.75	76.31	1.78	BS040
0731723	75.92	79.48	1.78	BS041
0731724	82.27	85.83	1.78	BS042
0731725	88.62	92.18	1.78	BS043
0731727	94.97	98.53	1.78	BS044
0731728	101.32	104.88	1.78	BS045
0731729	107.67	111.23	1.78	BS046
0731730	114.02	117.58	1.78	BS047
0731731	120.37	123.93	1.78	BS048

Product Code	Inner Diameter (mm)	Outside Diameter (mm)	Thickness	BS Standard
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0731733	126.72	130.28	1.78	BS049
0731734	133.07	136.63	1.78	BS050
0731735	9.19	14.43	2.62	BS110
0731736	10.77	16.01	2.62	BS111
0731737	12.37	17.61	2.62	BS112
0731738	13.95	19.19	2.62	BS113
0731739	15.54	20.78	2.62	BS114
0731740	17.12	22.36	2.62	BS115
0731741	18.72	23.96	2.62	BS116
0731742	20.29	25.53	2.62	BS117
0731743	21.9	27.14	2.62	BS118
0731744	23.47	28.71	2.62	BS119
0731745	25.07	30.31	2.62	BS120
0731746	26.65	31.89	2.62	BS121
0731747	28.25	33.49	2.62	BS122
0731749	29.82	35.06	2.62	BS123
0731750	31.42	36.66	2.62	BS124
0731751	33	38.24	2.62	BS125
0731752	34.6	39.84	2.62	BS126
0731753	36.17	41.41	2.62	BS127
0731755	37.77	43.01	2.62	BS128
0731756	39.35	44.59	2.62	BS129
0731859	40.95	46.19	2.62	BS130
0731860	42.52	47.76	2.62	BS131
0731862	44.12	49.36	2.62	BS132
0731863	45.7	50.94	2.62	BS133
0731864	17.3	22.54	2.62	BS134
0731865	48.9	54.14	2.62	BS135
0731866	50.47	55.71	2.62	BS136
0731867	52.07	57.31	2.62	BS137
0731868	53.65	58.89	2.62	BS138
0731869	55.25	60.49	2.62	BS139
0731870	56.82	62.06	2.62	BS140
0731871	58.42	63.66	2.62	BS141
0731872	60	65.24	2.62	BS142
0731873	61.6	66.84	2.62	BS143
0731874	63.17	68.41	2.62	BS144
0731875	64.77	70.01	2.62	BS145
0731876	66.35	71.59	2.62	BS146
0731878	67.95	73.19	2.62	BS147
0731957	69.52	74.76	2.62	BS148
0731958	71.12	76.36	2.62	BS149
0731959	72.7	77.94	2.62	BS150
0731960	75.87	81.11	2.62	BS151
0731961	82.22	87.46	2.62	BS152

Product Code	Inner Diameter (mm)	Outside Diameter (mm)	Thickness	BS Standard
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0731963	88.57	93.81	2.62	BS153
0731964	94.92	100.16	2.62	BS154
0731965	101.27	106.51	2.62	BS155
0731966	107.62	112.86	2.62	BS156
0731967	113.97	119.21	2.62	BS157
0731968	120.32	125.56	2.62	BS158
0731969	126.67	131.91	2.62	BS159
0731970	133.02	138.26	2.62	BS160
0731971	139.37	144.61	2.62	BS161
0731972	145.72	150.96	2.62	BS162
0731973	152.07	157.31	2.62	BS163
0731974	158.42	163.66	2.62	BS164
0731975	164.77	170.01	2.62	BS165
0731976	171.12	176.36	2.62	BS166
0731977	177.47	182.71	2.62	BS167
0731979	183.82	189.06	2.62	BS168
0731980	190.17	195.41	2.62	BS169
0731981	196.52	201.76	2.62	BS170
0731982	202.87	208.11	2.62	BS171
0731418	209.22	214.46	2.62	BS172
0731419	215.57	220.81	2.62	BS173
0731420	221.92	227.16	2.62	BS174
0731421	228.27	233.51	2.62	BS175
0731422	234.62	239.86	2.62	BS176
0731424	240.97	246.21	2.62	BS177
0731425	247.32	252.56	2.62	BS178
0731426	12.29	19.35	3.53	BS206
0731427	13.87	20.93	3.53	BS207
0731428	15.47	22.53	3.53	BS208
0731429	17.04	24.10	3.53	BS209
0731430	18.64	25.70	3.53	BS210
0731431	20.22	27.28	3.53	BS211
0731432	21.82	28.88	3.53	BS212
0731433	23.39	30.45	3.53	BS213
0731434	25	32.06	3.53	BS214
0731435	26.57	33.63	3.53	BS215
0731436	28.17	35.23	3.53	BS216
0731437	29.75	36.81	3.53	BS217
0731438	31.34	38.40	3.53	BS218
0731440	32.92	39.98	3.53	BS219
0731441	34.52	41.58	3.53	BS220
0731442	36.1	43.16	3.53	BS221
0731443	37.7	44.76	3.53	BS222
0731444	40.87	47.93	3.53	BS223
0731446	44.05	51.11	3.53	BS224

Product Code	Inner Diameter (mm)	Outside Diameter (mm)	Thickness	BS Standard
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0731447	47.22	54.28	3.53	BS225
0731448	50.4	57.46	3.53	BS226
0731449	53.57	60.63	3.53	BS227
0731450	56.75	63.81	3.53	BS228
0731983	59.92	66.98	3.53	BS229
0731985	63.1	70.16	3.53	BS230
0731986	66.27	73.33	3.53	BS231
0731987	69.44	76.50	3.53	BS232
0731988	72.62	79.68	3.53	BS233
0731989	75.79	82.85	3.53	BS234
0731990	78.97	86.03	3.53	BS235
0731991	82.14	89.20	3.53	BS236
0731992	85.32	92.38	3.53	BS237
0731993	88.49	95.55	3.53	BS238
0731994	91.67	98.73	3.53	BS239
0731995	94.84	101.90	3.53	BS240
0731996	98.02	105.08	3.53	BS241
0731997	101.19	108.25	3.53	BS242
0731998	104.37	111.43	3.53	BS243
0731999	107.54	114.60	3.53	BS244
0732001	110.72	117.78	3.53	BS245
0732002	113.89	120.95	3.53	BS246
0732003	117.07	124.13	3.53	BS247
0732004	120.24	127.30	3.53	BS248
0732005	123.42	130.48	3.53	BS249
0732006	126.59	133.65	3.53	BS250
0732007	129.77	136.83	3.53	BS251
0732008	132.94	140.00	3.53	BS252
0732009	136.12	143.18	3.53	BS253
0732010	139.3	146.36	3.53	BS254
0731646	142.47	149.53	3.53	BS255
0731648	145.65	152.71	3.53	BS256
0731649	148.82	155.88	3.53	BS257
0731650	152	159.06	3.53	BS258
0731651	158.35	165.41	3.53	BS259
0731652	164.7	171.76	3.53	BS260
0731654	171.05	178.11	3.53	BS261
0731655	177.4	184.46	3.53	BS262
0731656	183.75	190.81	3.53	BS263
0731657	190.1	197.16	3.53	BS264
0731658	196.45	203.51	3.53	BS265
0731659	202.8	209.86	3.53	BS266
0731660	209.15	216.21	3.53	BS267
0731661	215.5	222.56	3.53	BS268
0731662	221.85	228.91	3.53	BS269

Product Code	Inner Diameter (mm)	Outside Diameter (mm)	Thickness	BS Standard
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0731663	228.2	235.26	3.53	BS270
0731547	234.55	241.61	3.53	BS271
0731548	240.9	247.96	3.53	BS272
0731549	247.25	254.31	3.53	BS273
0731550	253.6	260.66	3.53	BS274
0731551	266.3	273.36	3.53	BS275
0731553	279	286.06	3.53	BS276
0731554	291.7	298.76	3.53	BS277
0731555	304.4	311.46	3.53	BS278
0731556	329.8	336.86	3.53	BS279
0731557	355.2	362.26	3.53	BS280
0731558	380.6	387.66	3.53	BS281
0731559	405.26	412.32	3.53	BS282
0731560	430.66	437.72	3.53	BS283
0731561	456.06	463.12	3.53	BS284
0731562	23.16	33.82	5.33	BS317
0731563	24.77	35.43	5.33	BS318
0731564	26.34	37.00	5.33	BS319
0731565	27.94	38.60	5.33	BS320
0731566	29.51	40.17	5.33	BS321
0731567	31.12	41.78	5.33	BS322
0731569	32.69	43.35	5.33	BS323
0731570	34.29	44.95	5.33	BS324
0731571	37.47	48.13	5.33	BS325
0731572	40.65	51.31	5.33	BS326
0731573	43.82	54.48	5.33	BS327
0731575	46.99	57.65	5.33	BS328
0731576	50.16	60.82	5.33	BS329
0731577	53.34	64.00	5.33	BS330
0731578	56.52	67.18	5.33	BS331
0731579	59.69	70.35	5.33	BS332
0731664	62.87	73.53	5.33	BS333
0731665	66.04	76.70	5.33	BS334
0731666	69.22	79.88	5.33	BS335
0731667	72.39	83.05	5.33	BS336
0731668	75.57	86.23	5.33	BS337
0731670	78.74	89.40	5.33	BS338
0731671	81.92	92.58	5.33	BS339
0731672	85.09	95.75	5.33	BS340
0731673	88.27	98.93	5.33	BS341
0731674	91.44	102.10	5.33	BS342
0731676	94.62	105.28	5.33	BS343
0731677	97.79	108.45	5.33	BS344
0731678	100.96	111.62	5.33	BS345
0731679	104.14	114.80	5.33	BS346

Product Code	Inner Diameter (mm)	Outside Diameter (mm)	Thickness	BS Standard
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0731680	107.32	117.98	5.33	BS347
0731681	110.49	121.15	5.33	BS348
0731682	113.67	124.33	5.33	BS349
0731683	116.84	127.50	5.33	BS350
0731684	120.02	130.68	5.33	BS351
0731685	123.19	133.85	5.33	BS352
0731686	126.37	137.03	5.33	BS353
0731687	129.54	140.20	5.33	BS354
0731688	132.72	143.38	5.33	BS355
0731689	135.89	146.55	5.33	BS356
0731690	139.07	149.73	5.33	BS357
0731691	142.24	152.90	5.33	BS358
0731692	145.42	156.08	5.33	BS359
0731693	148.59	159.25	5.33	BS360
0731581	151.77	162.43	5.33	BS361
0731582	158.12	168.78	5.33	BS362
0731583	164.47	175.13	5.33	BS363
0731584	170.82	181.48	5.33	BS364
0731585	177.17	187.83	5.33	BS365
0731586	183.52	194.18	5.33	BS366
0731879	189.87	200.53	5.33	BS367
0731880	196.22	206.88	5.33	BS368
0731881	202.57	213.23	5.33	BS369
0731882	208.92	219.58	5.33	BS370
0731884	215.27	225.93	5.33	BS371
0731885	221.62	232.28	5.33	BS372
0731886	227.97	238.63	5.33	BS373
0731887	234.32	244.98	5.33	BS374
0731888	240.67	251.33	5.33	BS375
0731889	247.02	257.68	5.33	BS376
0731757	253.37	264.03	5.33	BS377
0731758	266.07	276.73	5.33	BS378
0731759	278.77	289.43	5.33	BS379
0731761	291.47	302.13	5.33	BS380
0731762	304.17	314.83	5.33	BS381
0731763	329.57	340.23	5.33	BS382
0731764	354.97	365.63	5.33	BS383
0731765	380.37	391.03	5.33	BS384
0731766	405.26	415.92	5.33	BS385
0731767	430.66	441.32	5.33	BS386
0731768	456.06	466.72	5.33	BS387
0731769	481.46	492.12	5.33	BS388
0731770	506.86	517.52	5.33	BS389
0731771	532.26	542.92	5.33	BS390
0731772	557.66	568.32	5.33	BS391

Product Code	Inner Diameter (mm)	Outside Diameter (mm)	Thickness	BS Standard
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0731773	582.7	593.36	5.33	BS392
0731774	608.1	618.76	5.33	BS393
0731775	633.5	644.16	5.33	BS394
0731777	658.9	669.56	5.33	BS395
0731778	113.67	127.65	6.99	BS425
0731779	116.84	130.82	6.99	BS426
0731780	120.02	134.00	6.99	BS427
0731781	123.19	137.17	6.99	BS428
0731783	126.37	140.35	6.99	BS429
0731784	129.54	143.52	6.99	BS430
0731785	132.72	146.70	6.99	BS431
0731786	135.89	149.87	6.99	BS432
0731787	139.07	153.05	6.99	BS433
0731788	142.24	156.22	6.99	BS434
0731789	145.42	159.40	6.99	BS435
0731890	148.59	162.57	6.99	BS436
0731891	151.77	165.75	6.99	BS437
0731892	158.12	172.10	6.99	BS438
0731893	164.47	178.45	6.99	BS439
0731894	170.82	184.80	6.99	BS440
0731895	177.17	191.15	6.99	BS441
0731896	183.52	197.50	6.99	BS442
0731897	189.87	203.85	6.99	BS443
0731898	196.22	210.20	6.99	BS444
0731900	202.57	216.55	6.99	BS445
0731901	215.27	229.25	6.99	BS446
0731902	227.97	241.95	6.99	BS447
0731903	240.67	254.65	6.99	BS448
0731904	253.37	267.35	6.99	BS449
0731905	266.07	280.05	6.99	BS450
0731907	278.77	292.75	6.99	BS451
0731908	291.47	305.45	6.99	BS452
0731909	304.17	318.15	6.99	BS453
0731910	316.87	330.85	6.99	BS454
0731911	329.57	343.55	6.99	BS455
0731913	342.27	356.25	6.99	BS456
0731914	354.97	368.95	6.99	BS457
0731915	367.67	381.65	6.99	BS458
0731916	380.37	394.35	6.99	BS459
0731917	393.08	407.06	6.99	BS460
0731918	405.26	419.24	6.99	BS461
0731919	417.96	431.94	6.99	BS462
0731920	430.66	444.64	6.99	BS463
0731790	443.36	457.34	6.99	BS464
0731791	456.06	470.04	6.99	BS465

Product Code	Inner Diameter (mm)	Outside Diameter (mm)	Thickness	BS Standard
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0731792	468.76	482.74	6.99	BS466
0731793	481.46	495.44	6.99	BS467
0731794	494.16	508.14	6.99	BS468
0731795	506.86	520.84	6.99	BS469
0731796	532.26	546.24	6.99	BS470
0731797	557.66	571.64	6.99	BS471
0731799	582.7	596.68	6.99	BS472
0731800	608.1	622.08	6.99	BS473
0731801	633.5	647.48	6.99	BS474
0731802	658.9	672.88	6.99	BS475