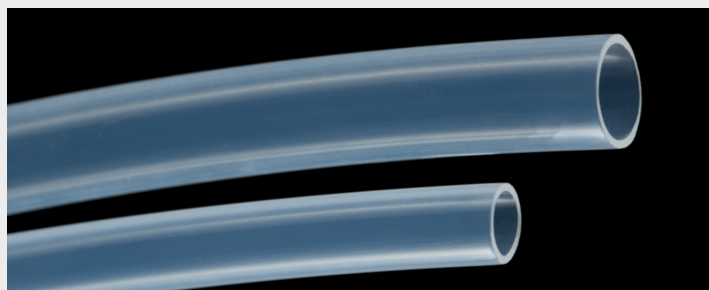


# Extruded Tubing

*Enhanced Extrusions To Accelerate Production*



*Request free samples of our tubing by contacting a Zeus representative today.*

## Overview

Zeus is your leader for performance extruded tubing. Our tubing products reach across all industries ranging from aerospace and automotive, electrical, energy exploration, fiber optics, fluid management, to medical, and more. Whether it is lubricity, flexibility, mechanical strength, or chemical resistance, Zeus extrudes tubing that can be a great solution for almost any application environment.

Many of our advanced tubing products are available in standard AWG and fractional sizes from a variety of resins such as PTFE, FEP, PFA, ETFE, PVDF, PEEK, and more. These items have varying wall thicknesses to give a host of options to engineers. We can also produce metric tubing as well as custom tubing upon request.

Extruded tubing has many applications. Fluid management is a key application, especially for tubing produced with resins such as PFA, PTFE, and FEP because of their exceptional chemical resistance; they are also available in a variety of configurations that can be adapted to most standard fittings.



COEFFICIENT OF FRICTION



CHEMICAL RESISTANCE



CONTINUOUS SERVICE TEMP

## Applications

- Catheters liners
- Fluid management
- Wire and cable insulation
- Sleeving for fiber optics

## Capabilities and Sizing

- Available resins include: ECTFE, EFEP, ETFE, FEP, Nylons, PE, PEEK, PET, PFA, PTFE, PVDF, and THV
- AWG and fractional sizes
- Metric sizes
- Custom sizes
- Colors

## Key Properties

- Working temperatures up to 500 °F / 260 °C
- Chemically resistant
- Flame resistance (UL 94 rating of V-0 for some resins)
- High lubricity
- Optically clear or opaque (depending on resin)
- Highly flexible or rigid (depending on resin)



# Extruded Tubing

## *ETFE, FEP, PFA, and PTFE*

Zeus tubing complies with UL-224, has been assigned UL File #E-64007, and is listed under the UL “recognized component program.” Additionally, (csa-opt) File #082582 has been awarded for PTFE, FEP Standard Wall, and Thin Wall.

On all cases of military or commercial specifications, latest revisions apply. Supplied in natural color unless otherwise specified. Custom Pantone colors or Zeus standard colors available on request.

Material and dimensions comply with ASTM 3295, 3296; AMS 3653, 3654, 3655; and MIL-I-22129. Annual testing data provided. Lot-to-lot testing available upon request.

\*AWG 32 not covered under ASTM or MIL standards.

INSIDE DIAMETER						
AWG SIZE	MINIMUM		NOMINAL		MAXIMUM	
	in.	mm	in.	mm	in.	mm
*32	0.008	0.203	0.010	0.254	0.012	0.305
30	0.010	0.254	0.012	0.305	0.015	0.381
28	0.013	0.330	0.015	0.381	0.018	0.457
26	0.016	0.406	0.018	0.457	0.021	0.533
24	0.020	0.508	0.022	0.559	0.026	0.660
23	0.023	0.584	0.026	0.660	0.029	0.737
22	0.025	0.635	0.028	0.711	0.032	0.813
21	0.029	0.737	0.032	0.813	0.035	0.889
20	0.032	0.813	0.034	0.864	0.038	0.965
19	0.036	0.914	0.038	0.965	0.042	1.067
18	0.040	1.016	0.042	1.067	0.046	1.168
17	0.045	1.143	0.047	1.194	0.052	1.321
16	0.051	1.295	0.053	1.346	0.058	1.473
15	0.057	1.448	0.059	1.499	0.065	1.651
14	0.064	1.626	0.066	1.676	0.072	1.829
13	0.072	1.829	0.076	1.930	0.081	2.057
12	0.081	2.057	0.085	2.159	0.091	2.311
11	0.091	2.311	0.095	2.413	0.101	2.565
10	0.102	2.591	0.106	2.692	0.112	2.845
9	0.114	2.896	0.118	2.997	0.124	3.150
8	0.129	3.277	0.133	3.378	0.139	3.531
7	0.144	3.658	0.148	3.759	0.155	3.937
6	0.162	4.115	0.166	4.216	0.174	4.420
5	0.182	4.623	0.186	4.724	0.195	4.953
4	0.204	5.182	0.208	5.283	0.218	5.537
3	0.229	5.817	0.234	5.944	0.244	6.198
2	0.258	6.553	0.263	6.680	0.273	6.934
1	0.289	7.341	0.294	7.468	0.305	7.747
0	0.325	8.255	0.330	8.382	0.342	8.687

# Extruded Tubing

*ETFE, FEP, PFA, and PTFE*

AWG SIZE	WALL DIMENSIONS											
	STANDARD WALL				THIN WALL				LIGHTWEIGHT WALL			
	NOMINAL		TOLERANCE		NOMINAL		TOLERANCE		NOMINAL		TOLERANCE	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
*32	0.005	0.127	± 0.002	± 0.05	0.005	0.127	± 0.002	± .05	-	-	-	-
30	0.009	0.229	± 0.002	± 0.05	0.009	0.229	± 0.002	± 0.05	0.006	0.152	± 0.002	± 0.05
28	0.009	0.229	± 0.002	± 0.05	0.009	0.229	± 0.002	± 0.05	0.006	0.152	± 0.002	± 0.05
26	0.009	0.229	± 0.002	± 0.05	0.009	0.229	± 0.002	± 0.05	0.006	0.152	± 0.002	± 0.05
24	0.012	0.305	± 0.002	± 0.05	0.010	0.254	± 0.003	± 0.08	0.006	0.152	± 0.002	± 0.05
23	0.012	0.305	± 0.002	± 0.05	0.010	0.254	± 0.003	± 0.08	0.006	0.152	± 0.002	± 0.05
22	0.012	0.305	± 0.002	± 0.05	0.010	0.254	± 0.003	± 0.08	0.006	0.152	± 0.002	± 0.05
21	0.012	0.305	± 0.002	± 0.05	0.010	0.254	± 0.003	± 0.08	0.006	0.152	± 0.002	± 0.05
20	0.016	0.406	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08	0.006	0.152	± 0.002	± 0.05
19	0.016	0.406	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08	0.006	0.152	± 0.002	± 0.05
18	0.016	0.406	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08	0.006	0.152	± 0.002	± 0.05
17	0.016	0.406	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08	0.006	0.152	± 0.002	± 0.05
16	0.016	0.406	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08	0.006	0.152	± 0.002	± 0.05
15	0.016	0.406	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08	0.006	0.152	± 0.002	± 0.05
14	0.016	0.406	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08	0.008	0.203	± 0.002	± 0.05
13	0.016	0.406	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08	0.008	0.203	± 0.002	± 0.05
12	0.016	0.406	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08	0.008	0.203	± 0.002	± 0.05
11	0.016	0.406	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08	0.008	0.203	± 0.002	± 0.05
10	0.016	0.406	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08	0.008	0.203	± 0.002	± 0.05
9	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.008	0.203	± 0.002	± 0.05
8	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.008	0.203	± 0.002	± 0.05
7	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.008	0.203	± 0.002	± 0.05
6	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.010	0.254	± 0.003	± 0.08
5	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.010	0.254	± 0.003	± 0.08
4	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.010	0.254	± 0.003	± 0.08
3	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.010	0.254	± 0.003	± 0.08
2	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.010	0.254	± 0.003	± 0.08
1	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.010	0.254	± 0.003	± 0.08
0	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08

# Extruded Tubing

## *ETFE, FEP, PFA, and PTFE*

Zeus tubing complies with UL-224, has been assigned UL File # E-64007, and is listed under the UL “recognized component program”. Additionally, (csa-opt) File #082582 has been awarded for PTFE, FEP Standard Wall and Thin Wall.

On all cases of military or commercial specifications, latest revisions apply. Supplied in natural color unless otherwise specified. Custom Pantone colors or Zeus standard colors available on request.

Material and dimensions comply with ASTM 3295, 3296; AMS 3653, 3654, 3655; and MIL-I-22129. Annual testing data provided. Lot-to-lot testing available upon request.

INSIDE DIAMETER						
FRACTIONAL SIZES BY ID	MINIMUM		NOMINAL		MAXIMUM	
	in.	mm	in.	mm	in.	mm
1/8	0.120	3.048	0.125	3.175	0.130	3.302
1/8	0.125	3.175	0.130	3.302	0.135	3.429
3/16	0.188	4.775	0.192	4.877	0.198	5.029
1/4	0.250	6.350	0.255	6.477	0.260	6.604
5/16	0.313	7.950	0.321	8.153	0.332	8.433
3/8	0.375	9.525	0.387	9.830	0.394	10.008
7/16	0.438	11.125	0.451	11.455	0.458	11.633
1/2	0.500	12.700	0.515	13.081	0.520	13.208
5/8	0.625	15.875	0.643	16.332	0.650	16.510
3/4	0.750	19.050	0.772	19.609	0.775	19.685
7/8	0.875	22.225	0.902	22.911	0.927	23.546
1	1.000	25.400	1.030	26.162	1.060	26.924
1-1/4	1.250	31.750	1.287	32.690	1.325	33.655
1-1/2	1.500	38.100	1.550	39.370	1.580	40.132

WALL DIMENSIONS												
INSIDE DIAMETER	STANDARD WALL				THIN WALL				LIGHTWEIGHT WALL			
	NOMINAL		TOLERANCE		NOMINAL		TOLERANCE		NOMINAL		TOLERANCE	
FRACTIONAL SIZES BY ID	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
1/8	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	-	-	-	-
1/8	-	-	-	-	-	-	-	-	0.008	0.203	± 0.002	± 0.05
3/16	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.010	0.254	± 0.003	± 0.08
1/4	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.010	0.254	± 0.003	± 0.08
5/16	0.020	0.508	± 0.004	± 0.10	0.015	0.381	± 0.003	± 0.08	0.012	0.305	± 0.003	± 0.08
3/8	0.025	0.635	± 0.005	± 0.13	0.015	0.381	± 0.003	± 0.08	0.015	0.381	± 0.005	± 0.13
7/16	0.025	0.635	± 0.005	± 0.13	0.018	0.457	± 0.004	± 0.10	0.018	0.457	± 0.005	± 0.13
1/2	0.025	0.635	± 0.005	± 0.13	0.018	0.457	± 0.004	± 0.10	0.018	0.457	± 0.005	± 0.13
5/8	0.025	0.635	± 0.005	± 0.13	0.020	0.508	± 0.004	± 0.10	0.020	0.508	± 0.005	± 0.13
3/4	0.030	0.762	± 0.006	± 0.15	0.025	0.635	± 0.005	± 0.13	0.020	0.508	± 0.005	± 0.13
7/8	0.035	0.889	± 0.007	± 0.18	-	-	-	-	-	-	-	-
1	0.035	0.889	± 0.007	± 0.18	-	-	-	-	-	-	-	-
1-1/4	0.040	1.016	± 0.007	± 0.18	-	-	-	-	-	-	-	-
1-1/2	0.045	1.143	± 0.007	± 0.18	-	-	-	-	-	-	-	-

# Extruded Tubing

## ETFE, FEP, PFA, and PTFE Metric Tubing

Supplied in natural unless otherwise specified. Custom Pantone colors or Zeus standard colors available on request.

0.50 mm WALL TUBING			
ORDERING SIZE (ID/OD)		ID	TOLERANCE
ID	OD		±
0.50	1.50	0.50	0.05
1.00	2.00	1.00	0.05
1.50	2.50	1.50	0.10
2.00	3.00	2.00	0.10
2.50	3.50	2.50	.015
3.00	4.00	3.00	0.15
3.50	4.50	3.50	0.15
4.00	5.00	4.00	0.15
4.50	5.50	4.50	0.20
5.00	6.00	5.00	0.20
5.50	6.50	5.50	0.20
6.00	7.00	6.00	0.20
6.50	7.50	6.50	0.20
7.00	8.00	7.00	0.20
7.50	8.50	7.50	0.20
8.00	9.00	8.00	0.20
8.50	9.50	8.50	0.30
9.00	10.00	9.00	0.30
12.00	13.00	12.00	0.30
13.00	14.00	13.00	0.50

Wall thickness for ID sizes 0.50 - 13.00" = 0.50 ± 0.07".

1.00 mm WALL TUBING			
ORDERING SIZE (ID/OD)		ID	TOLERANCE
ID	OD		±
1.00	3.00	1.00	0.05
2.00	4.00	2.00	0.10
2.50	4.50	2.50	0.15
3.00	5.00	3.00	0.15
3.50	5.50	3.50	0.15
4.00	6.00	4.00	0.15
4.50	6.50	4.50	0.20
5.00	7.00	5.00	0.20
5.50	7.50	5.50	0.20
6.00	8.00	6.00	0.20
6.50	8.50	6.50	0.20
7.00	9.00	7.00	0.20
7.50	9.50	7.50	0.20
8.00	10.00	8.00	0.20
8.50	10.50	8.50	0.30
9.00	11.00	9.00	0.30
9.50	11.50	9.50	0.30
10.00	12.00	10.00	0.30
10.50	12.50	10.50	0.30
11.00	13.00	11.00	0.30
12.00	14.00	12.00	0.30
13.00	15.00	13.00	0.30
14.00	16.00	14.00	0.30
15.00	17.00	15.00	0.40
16.00	18.00	16.00	0.40
18.00	20.00	18.00	0.40
19.00	21.00	19.00	0.40
19.50	21.5	19.50	0.40
20.00	22.00	20.00	0.40
21.00	23.00	21.00	0.50
22.00	24.00	22.00	0.50
22.50	24.50	22.50	0.50
23.00	25.00	23.00	0.50
23.50	25.50	23.50	0.50

Wall thickness for ID sizes 1.00 - 23.50" = 1 ± 0.15"

# Extruded Tubing

## *PTFE, FEP, PFA ETFE Metric Tubing*

Supplied in natural unless otherwise specified. Custom Pantone colors or Zeus standard colors available on request.

1.00MM WALL TUBING				
ORDERING SIZE (ID/OD)		ID	TOLERANCE	WALL THICKNESS
ID	OD		±	
25.0	27.0	25.0	0.50	1.00 ± 0.15
26.0	28.0	26.0	0.50	1.00 ± 0.15
27.0	29.0	27.0	0.50	1.00 ± 0.15
28.0	30.0	28.0	0.50	1.00 ± 0.15
29.0	31.0	29.0	0.50	1.00 ± 0.15
30.0	32.0	30.0	0.60	1.00 ± 0.15
32.0	34.0	32.0	0.60	1.00 ± 0.15
37.0	39.0	37.0	0.60	1.00 ± 0.15
38.0	40.0	38.0	0.60	1.00 ± 0.15
40.0	42.0	40.0	0.75	1.00 ± 0.15
42.0	44.0	42.0	0.75	1.00 ± 0.15
43.0	45.0	43.0	0.75	1.00 ± 0.15
45.0	47.0	45.0	0.75	1.00 ± 0.15
45.5	47.5	45.5	0.75	1.00 ± 0.15
48.0	50.0	48.0	0.75	1.00 ± 0.15
50.0	52.0	50.0	0.75	1.00 ± 0.15

2.00MM WALL TUBING				
ORDERING SIZE (ID/OD)		ID	TOLERANCE	WALL THICKNESS
ID	OD		±	
2.0	6.0	2.0	0.10	1.50 ± 0.20
4.0	8.0	4.0	0.15	1.50 ± 0.20
6.0	10.0	6.0	0.20	1.50 ± 0.20
8.0	12.0	8.0	0.20	1.50 ± 0.20
10.0	14.0	10.0	0.30	1.50 ± 0.20
12.0	16.0	12.0	0.30	1.50 ± 0.20
14.0	18.0	14.0	0.40	1.50 ± 0.20
16.0	20.0	16.0	0.40	1.50 ± 0.20
20.0	24.0	20.0	0.50	1.50 ± 0.20
25.0	29.0	25.0	0.50	1.50 ± 0.20
28.0	32.0	28.0	0.50	1.50 ± 0.20
28.5	32.5	28.5	0.50	1.50 ± 0.20
32.0	36.0	32.0	0.60	1.50 ± 0.20
36.0	40.0	36.0	0.60	1.50 ± 0.20
40.0	44.0	40.0	0.75	1.50 ± 0.20
46.0	50.0	46.0	0.75	1.50 ± 0.20

For ID sizes 2 - 46 mm, wall thickness = 1.5 ± 0.2 mm.

1.50MM WALL TUBING				
ORDERING SIZE (ID/OD)		ID	TOLERANCE	WALL THICKNESS
ID	OD		±	
1.5	4.5	1.5	0.10	1.50 ± 0.20
2.0	5.0	2.0	0.15	1.50 ± 0.20
3.0	6.0	3.0	0.15	1.50 ± 0.20
5.0	9.0	5.0	0.20	1.50 ± 0.20
6.0	13.0	6.0	0.20	1.50 ± 0.20
10.0	15.0	10.0	0.30	1.50 ± 0.20
12.0	16.0	12.0	0.30	1.50 ± 0.20
13.0	17.0	13.0	0.30	1.50 ± 0.20
14.0	19.0	14.0	0.30	1.50 ± 0.20
16.0	21.0	16.0	0.40	1.50 ± 0.20
18.0	22.0	18.0	0.40	1.50 ± 0.20
19.0	23.0	19.0	0.40	1.50 ± 0.20
20.0	24.0	20.0	0.50	1.50 ± 0.20
21.0	25.0	21.0	0.50	1.50 ± 0.20
22.0	25.0	22.0	0.50	1.50 ± 0.20
25.0	28.0	25.0	0.50	1.50 ± 0.20
28.0	31.0	28.0	0.50	1.50 ± 0.20
29.0	32.0	29.0	0.50	1.50 ± 0.20
30.0	33.0	30.0	0.60	1.50 ± 0.20
40.0	43.0	40.0	0.75	1.50 ± 0.20
49.0	52.0	49.0	0.75	1.50 ± 0.20

For ID sizes 1.5 - 49.0 mm, wall thickness = 1.5 ± 0.2 mm.