EMT Conduit Fill Chart

EMT conduit fill chart, 1/2 to 4 inch

Most THHN/THWN-2 conductors of one size at 40% fill.

The usual fill rule limits the wires to 53% of the conduit's internal area for one conductor, 31% for two and 40% for three or more. This page works out the area of the conduit and of each wire from the manufacturer dimensions below, then counts how many wires fit under the limit.

Most THHN/THWN-2 conductors of one size that fit in EMT at the 40% fill limit

Wire size	OD used (in)	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"
14 AWG	0.120	10	18	30	52	72	118	207	312	408	521
12 AWG	0.140	7	13	22	38	52	87	152	229	299	383
10 AWG	0.170	5	9	15	26	35	59	103	155	203	259
8 AWG	0.230	2	5	8	14	19	32	56	85	111	142
6 AWG	0.254	2	4	6	11	16	26	46	69	91	116
4 AWG	0.330	1	2	4	6	9	15	27	41	53	68
3 AWG	0.360	1	2	3	5	8	13	23	34	45	57
2 AWG	0.390	1	1	2	5	6	11	19	29	38	49
1 AWG	0.450	0	1	2	3	5	8	14	22	29	37
1/0 AWG	0.500	0	1	1	3	4	6	11	18	23	30
2/0 AWG	0.540	0	0	1	2	3	5	10	15	20	25
3/0 AWG	0.600	0	0	1	2	2	4	8	12	16	20
4/0 AWG	0.660	0	0	1	1	2	3	6	10	13	17

EMT dimensions used

Conduit type	Trade size	Inside diameter used (in)	ID basis	Internal area (in²)	One wire, 53% (in²)	Two wires, 31% (in²)	Three or more, 40% (in²)
EMT	1/2"	0.622	nominal ID	0.304	0.161	0.094	0.122
EMT	3/4"	0.824	nominal ID	0.533	0.283	0.165	0.213
EMT	1"	1.049	nominal ID	0.864	0.458	0.268	0.346
EMT	1-1/4"	1.380	nominal ID	1.496	0.793	0.464	0.598
EMT	1-1/2"	1.610	nominal ID	2.036	1.079	0.631	0.814
EMT	2"	2.067	nominal ID	3.356	1.778	1.040	1.342

Conduit type	Trade size	Inside diameter used (in)	ID basis	Internal area (in²)	One wire, 53% (in²)	Two wires, 31% (in²)	Three or more, 40% (in²)
EMT	2-1/2"	2.731	nominal ID	5.858	3.105	1.816	2.343
EMT	3"	3.356	nominal ID	8.846	4.688	2.742	3.538
EMT	3-1/2"	3.834	nominal ID	11.545	6.119	3.579	4.618
EMT	4"	4.334	nominal ID	14.753	7.819	4.573	5.901

Wire dimensions used

The largest published diameter is used.

Wire size	Cerrowire - THHN/THWN-2 spec sheet	Prysmian - THHN/THWN-2 High Speed SPEC 5290	Encore Wire - SuperSlick Elite THHN spec sheet	Southwire - product pages THHN/THWN 14/12/10 AWG stranded	Priority Wire & Cable - Copper THHN/THWN-2 spec	Southw SIM THHN/TH 2 SPEC 10	Wire size	Cerrowire - THHN/THWN-2 spec sheet	Prysmian - THHN/THWN-2 High Speed SPEC 5290	Encore Wire - SuperSlick Elite THHN spec sheet	Southwire - product pages THHN/THWN 14/12/10 AWG stranded	Priority Wire & Cable - Copper THHN/THWN-2 spec	South SI THHN/TI 2 SPEC 1
14 AWG	0.111	0.109	0.109	0.113	0.120		**3/0 AWG**	0.584	0.557	0.568	—	0.600	
12 AWG	0.130	0.130	0.128	0.132	0.140		**4/0 AWG**	0.642	0.612	0.624	—	0.660	
10 AWG	0.164	0.161	0.161	0.165	0.170		**250 kcmil**	0.711	0.694	—	—	0.720	
8 AWG	0.216	0.212	0.213	—	0.230		**300 kcmil**	0.766	0.747	—	—	0.766	
6 AWG	0.254	0.248	0.249	—	0.250		**350 kcmil**	0.817	0.797	—	—	0.830	
4 AWG	0.324	0.317	0.318	—	0.330		**400 kcmil**	0.864	0.842	—	—	0.864	
3 AWG	0.352	—	0.346	—	0.360		**500 kcmil**	0.949	0.925	—	—	0.960	
2 AWG	0.384	0.375	0.378	—	0.390		**600 kcmil**	1.051	1.024	—	—	1.051	
1 AWG	0.446	0.427	0.435	—	0.450		**750 kcmil**	1.156	1.126	—	—	1.170	
1/0 AWG	0.486	0.466	0.474	—	0.500		**1000 kcmil**	1.310	1.275	—	—	1.320	
2/0 AWG	0.532	0.509	0.518	—	0.540	0.524		**0.540**					

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