

SPECIFICATIONS OF COAXIAL CABLE TYPES
MOST USEFUL FOR COUNTING PURPOSES

Numbers followed by e were calculated or experimentally determined,
all others from manufacturers' literature.

Cable type No.	Mfr ^a	Z ₀ (ohms)	C (μf/ft)	β = v/c	Over all Diam. (in.)	Outer conductor i. d. (in.)	material	Inner con- ductor type	o. d. (in.) (copper unless noted).
RG 8	A, F, An	52	29.5	0.659	0.405	0.285	Cu braid	stranded	0.086
RG 9	A	51	30	0.659	0.420	0.280	Ag, Cu braids	stranded Ag plated	0.086
RG 9	F	52	30		0.430	0.285	"	"	0.086
RG 19	A, F, An	52	29.5	0.659	1.12	0.910	Cu braid	solid	0.250
RG 58									
58B	A, F	53.5	28.5	0.659	0.195	0.116	tinned Cu braid	solid	0.032
RG 58A									
58C	A	50	28.5	0.659	0.195	0.116	tinned Cu braid	stranded	0.034
RG 58A, 58C	F	52	28.5	0.659	0.200	0.116	tinned Cu braid	"	0.032
Styroflex P-D		50	22	0.90e	0.875	0.76	solid Al	solid	0.300
		50	22	0.92e	3.125	2.85	"	tubing	1.157
RG 62	A, F	93	13.5	0.84	0.242	0.146	Cu braid	solid	0.025
RG 63	A, F	125	10	0.84	0.405	0.285	" "	"	0.025
Prodelin		125	9	0.9	0.875	0.84	Solid Al	solid	0.082
Styrofoam ^d 2"		125	8.2e	0.99	~2.10	2.000 ±.020	Solid Cu foil	tubing	0.2500 ±.0015
"	1½"	125	8.2e	0.99	~1.60	1.500 ±.015	"	"	0.1875 ±.0015
Suprenant 9923		125	~10	~0.84	0.17	0.14	Cu braid	stranded	0.012
Surprenant 6244		125	9.3			0.140			
RG 114	A	185	6.5	0.86	0.405	0.285	Cu braid	solid	0.012
G3T	Tr	1977	5.4	0.97	0.64	0.52	braid	stranded	0.015
C33T	Tr	220	4.8	0.97	0.64	0.52	braid	stranded	0.01

List of symbols on p. 4

I. (Cont'd) Specifications of Coaxial Cable Types most useful for Counting Purposes

Cable Types	Dielectric material	K_{eff}^f	Attenuation		Rise-time ^g T_0 (Sec)	Remarks
			100 Mc (db/100 ft)	1000 Mc		
RG 8	solid polyethylene	2.3e	2.1	8.8	3.5×10^{-10}	doubly shielded RG 8
RG 9	solid polyethylene	2.3e	2.1	8.5	3.3×10^{-10}	
RG 9	solid polyethylene	2.3e	1.9	8.0	2.9×10^{-10}	" " limited flexibility
RG 19	solid polyethylene	2.3e	0.70	3.4	5.3×10^{-11}	
RG 58,	solid polyethylene	2.3e	5.2	20	1.8×10^{-9}	flex- b. r. =10 in. ible b. r. =50 in. Cu weld center cond. (Eng's samples received) Note ^d
58B,						
58A,						
58C						
58A,	solid polyethylene	2.3e	5.3	20	1.8×10^{-9}	
5 C						
Styroflex	a spiral of laminated polystyrene tape	1.24e	0.45	1.6	1.2×10^{-11}	
		1.18e	0.13	0.5	1.2×10^{-12}	
RG 62	semisolid polyethylene	1.42e	3.0	10.4	4.9×10^{-10}	
RG 63	semisolid polyethylene	1.42e	2.0	7.0	2.2×10^{-10}	
Prodelin	polyethylene tubes	~1.25	~0.6	1.4 ^e	9.3×10^{-12}	
Styrofoam ²	"solid" styrofoam	~1.03	0.2	0.6	1.6×10^{-12}	
1 ¹	" "	~1.03	0.25	0.8	2.9×10^{-12}	
Suprenant	semi-solid polyethylene	~1.4	4.7 ^e	15 ^e	1.0×10^{-9}	
RG 114	semisolid polyethylene	1.35e	6.8e	23e	2.4×10^{-9}	
C3T	polystyrene beads	1.1	1.9	7.6 ^k	4.4×10^{-10}	
C33T	polystyrene beads	1.1	2.4	10 ^k	7.6×10^{-10}	

^aManufacturers: A--Amphenol; An-Andrew Corp.; F--Federal Radio and Telephone Co. P-D--Phelps-Dodge Copper Products Corp.; Tr--Transradio Ltd. (London, England)

^dStyrofoam transmission line is designed and built at UCRL. Fabrication described in UCRL 3597

^eCalculated

^f $K_{\text{eff}} - \text{Effective dielectric constant} \approx 1/\beta^2.$

^g T_0 - Rise time of output pulse from 0 to 50% when input pulse is a step function with zero rise time. See CC2-1. Figures quoted are for a 100-foot length and are calculated from attenuation at 1000 Mc. See p.26. Values for other lengths can be found by multiplying quoted figures by $t^2/(100)^2$, where t is the length expressed in feet.

^j- b. r. = minimum bending radius

^k- @ 600 Mc.

II-A. Cable types (not specifically designed for high temperatures) of possible use for counting purposes.

1. By RG Number

RG No.	Amphenol No.	Z_0 (ohms)	Dielectric*	o. d. of outer jacket (in.)	Atten. @ 1000 Mc (db/100')	Reference*	Remarks *
5	21-001	52.5	P	0.332	11.5	A, F	Dbl. sh. -CC
5A	21-271	50	P	0.328	8.8	"	Dbl. sh-SS; silver plated center cond. 5B (21-294) [§]
6	21-002	76	P	0.332	11.2	"	6 A (21-330) [§]
7	21-003	97	T	0.370	8.9	"	Repl. by 62
§8	21-004	52	P	0.405	8.5	A, F, An	8A (21-290) [§]
§9	21-005	51, 52	P	0.420	8.5	A, F	Dbl. sh-SC; 8 with extra shield
9A	21-231	51	P	0.420	8.6	"	Dbl. sh. -SS 9B (21-233) [§]
10	21-006	52	P	0.475	8.5	"	8 with armor 10A (21-338) [§]
11	21-007	75	P	0.405	8.2	"	11A (21-296) [§]
12	21-008	75	P	0.475	8.2	"	11 with armor 12A (21-340) [§]
13	21-009	74	P	0.420	8.2	"	Dbl. sh. -CC 13A(21-334) [§]
14	21-010	52	P	0.545	6.0	"	Dbl. sh. -CC 14A (21-336) [§]
15	21-011	76	P	0.545	6.5	"	Repl. by 11, 12
17	21-013	52	P	0.870	4.4	A, F, An	17A (21-298) [§]
17B	- - -	52	P	0.940	- -	A	Special order - Dbl. sh. -SS
18	21-014	52	P	0.945	4.4	A, F	18A(21-300) [§]
§19	21-015	52	P	1.12	3.5	"	19A(21-303) [§]
20	21-016	52	P	1.195	3.5	"	19 with armor, 20A (21-305) [§]
21	21-017	53	P	0.332	46.0	"	{ Dbl. sh-SS Nichrome center conductor 21A(21-308) [§]

§, §, * List of symbols on p. 9.

Table II-A (continued)

RG No.	Amphenol No.	Z ₀ (ohms)	Dielectric	o. d. of outer jacket (in.)	Atten. @ 1000 Mc (db/100')	Reference	Remarks *
34	21-019	71	P	0.625	6.0	A, F	34A(21-429) ^f
35	21-020	71	P	0.945	4.2	"	Armored 35A (21-311)
42	21-021	78	P	0.342	54.0	A	Dbl. sh. -SS; repl. by 21
54A	21-022	58	P	0.250	11.5	A, F	54 Obsolete
55	21-023	53.5	P	0.206	17.0	"	Dbl. sh. TT
58	21-024	53.5	P	0.195	20	"	58B (21-315) ^f
58A	21-199	50	P	0.195	24	A, F	58C (21-316) ^f
59	21-025	73	P	0.242	14.0	"	59A (21-291) ^f
§62	21-026	93	T	0.242	9.0	"	62A (21-318) ^f
§63	21-027	125	T	0.405	6.3	A, F	63B (21-320) ^f 63A obsolete
65		950		0.405		F	Dbl. sh. -TT Delay line-0.043 μsec/foot 22db/100' @ 10 Mc
71	21-029	93	T	0.250	9.0	A, F	Dbl. sh. -TT
72		150		0.630		A	Made on special order only
73		25	S	0.275		A	Made on special order only Dbl. sh. -CC
74	21-041	52	P	0.615	6.0	A, F	14 with armor Dbl. sh. -CC 74A (21-321) ^f
79	21-070	125	T	0.475	6.3	A, F	63 with armor 79B (21-325) ^f 79A obsolete
83	21-180	35	T	0.405	9.6	A	
89		125	B	0.632	6.3	A, F	
100		35	P	0.242		A	On special order
§114	21-440	185	B	0.405	5.5 @ 200 A		114A

f, §, * - List of symbols on p. 9.

Table II-A (continued)

RG no.	Amphenol No.	Z ₀ (ohms)	Dielectric #	o. d. of outer jacket (in.)	Atten. @ 1000 Mc (db/100')	Reference*	Remarks
122	21-441	150	P	0.160	29	A, F	
125	21-442	150	B	0.600	--	A	Low-temp. jacket
133	21-525	95	P	0.405	--	A	
147		52	P	1.937	--		19 w/armor
148		52	P	0.800	--		8 w/armor
149	21-467	75	P	0.405	--		low noise
150		75	P				149 w/armor
156		50		0.520		F	db/100' @ 10 Mc
157		"		0.690		F	0.58 db/100' @ 10 Mc
158		25		0.690		F	0.92 db/100' @ 10 Mc
164		71	P	0.870	--		
174	21-598	50	P	0.100	--	A	19db/100' @ 400 Mc Miniature
177	21-708	50	P	0.895			Replaces 17B, Dbl Sh-SS
183	-----	50					
189		50	SSP	0.875			

} tri-axia

LIST OF SYMBOLS

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Dielectrics	References
B - Braided polyethylene v. p. = 84	A - Amphenol Corp., Catalog W-1
P - Solid polyethylene = 69.5	An - Andrew Corp., Catalog 21
T - Polyethylene thread = 84	F - Federal Tel. and Radio Corp.
SSP - Semi-solid polyethylene	M - Microdot

Remarks
(outer cond. materials)

C - Copper

S - Silvered copper

T - Tinned copper