

ELONGATION & SPRINGINESS FOR ENAMELLED ROUND COPPER WINDING WIRES (BASIS: IS 13730-.. and IS 13778 – 3)

Nominal conductor dia.		Elongation to break	Test Method		Spring back requirements (degrees)			
			Type	Mandrel tension				
					Part 20: Solderable PUR, Class 155			
					Part 13: Dual coated PE(l)+PAI, Class 200			
					Part 1 : PVA, Class 105			
					Part 34: Polyester, Class 130L			
					Part 3 : Polyester, Class 155			
					Part 8 : Polyesterimide, Class 180			
mm	SWG	(%)		(mm)	(N)	Grade 1	Grade 2	Grade 3
							Grade 1B	Grade 2B
0.018		5						
0.020		6						
0.022		6						
0.025		7						
0.028		7						
0.032		8						
0.036		8						
0.040		9						
0.041	48	9		-	-	-	-	-
0.045		9						
0.050		10						
0.051	47	10		-	-	-	-	-
0.056		10						
0.061	46	12		-	-	-	-	-
0.063		12						
0.071	45	13		-	-	-	-	-
0.080		14	Five turns around the Mandrel	5	0.25	70	80	100
0.081	44	15		5	0.25	67	77	94
0.090		15		5	0.25	67	77	94
0.091	43	16		5	0.25	64	73	90
0.100		16		5	0.25	64	73	90
0.102	42	17		7	0.5	64	73	88
0.112	41	17		7	0.5	64	73	88
0.122	40	17		7	0.5	62	70	84
0.125		17		7	0.5	62	70	84
0.132	39	18		7	0.5	59	67	79
0.140		18		7	0.5	59	67	79
0.152	38	19		10	1	59	67	78
0.160		19		10	1	59	67	78
0.173	37	20		10	1	57	65	75
0.180		20		10	1	57	65	75
0.193	36	21	10	1	54	62	72	
0.200		21	10	1	54	62	72	
0.213	35	21	12.5	2	51	59	68	
0.224		21	12.5	2	51	59	68	
0.234	34	22	12.5	2	49	56	65	
0.250		22	12.5	2	49	56	65	
0.254	33	22	12.5	2	47	53	61	
0.274	32	22	12.5	2	47	53	61	
0.280		22	12.5	2	47	53	61	
0.295	31	23	19	4	50	55	62	
0.315	30	23	19	4	50	55	62	
0.315		23	19	4	50	55	62	

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Nominal conductor dia.		Elongation to break (%)	Test Method		Spring back requirements (degrees)			
mm	SWG		Type	Mandrel tension		Grade 1	Grade 2 Grade 1B	Grade 3 Grade 2B
			(mm)	(N)				
0.345	29	23	Five turns around the Mandrel	19	4	48	53	59
0.355		23		19	4	48	53	59
0.376	28	24		19	4	45	50	55
0.400		24		19	4	45	50	55
0.417	27	25		25	8	44	48	53
0.450		25		25	8	44	48	53
0.457	26	25		25	8	43	47	51
0.500		25		25	8	43	47	51
0.508	25	26		25	8	41	44	48
0.559	24	26		25	8	41	44	48
0.560		26		25	8	41	44	48
0.610	23	27		37.5	12	46	50	53
0.630		27		37.5	12	46	50	53
0.710		28		37.5	12	44	47	50
0.711	22	28		37.5	12	41	43	46
0.800		28		37.5	12	41	43	46
0.813	21	29		50	15	45	48	51
0.900		29		50	15	45	48	51
0.914	20	30		50	15	42	45	47
1.000		30		50	15	42	45	47
1.016	19	30		50	15	39	41	43
1.120		30		50	15	39	41	43
1.219	18	31		50	15	35	37	39
1.250		31		50	15	35	37	39
1.400		32		50	15	32	34	36
1.422	17	32		50	15	28	30	32
1.600		32		50	15	28	30	32
1.626	16	32	By 30° Bending			5	5	5
1.800		32				5	5	5
1.829	15	33				5	5	5
2.000		33				5	5	5
2.032	14	33				5	5	5
2.240		33				5	5	5
2.337	13	33				5	5	5
2.500		33				5	5	5
2.642	12	34				5	5	5
2.800		34				5	5	5
2.946	11	34				5	5	5
3.150		34				5	5	5
3.550		35				5	5	5
4.000		35			5	5	5	
4.500		36			5	5	5	
5.000		36			5	5	5	

Note: For intermediate conductor sizes, the elongation value and spring back figure of the next larger Nominal conductor diameter shall be taken.