

**RESISTANCE TO ABRASION (UNIDIRECTIONAL SCRAPE) TEST FOR ENAMELLED ROUND COPPER WINDING WIRES (BASIS: IS 13730-.. and IS 13778 – 3)**

Nominal Conductor Diameter		Requirements for													
		Part 34 Polyester Wires Class 130L				Part 3 Polyester Wires Class 155				Part 8 Polyesterimide Wires Class 180					
		Grade 1		Grade 2		Grade 1		Grade 2		Grade 1		Grade 2		Grade 2	
		Min. (N)	Avg. (N)	Min. (N)	Avg. (N)	Min. (N)	Avg. (N)	Min. (N)	Avg. (n)	MIN. (n)	Avg. (N)	Min. (N)	Avg. (N)	Min. (N)	Avg. (N)
(mm)	SWG														
0.25	-	2.3	2.7	3.8	4.5	2.3	2.7	3.8	4.5	2.45	2.85	4	4.7	4.9	5.8
0.28	33 & 32	2.45	2.9	4.1	4.8	2.45	2.9	4.1	4.8	2.6	3.1	4.3	5.05	5.3	6.25
0.315	31 & 30	2.65	3.15	4.4	5.2	2.65	3.15	4.4	5.2	2.8	3.35	4.6	5.45	5.7	6.7
0.355	29	2.85	3.4	4.75	5.6	2.85	3.4	4.75	5.6	3.05	3.6	4.95	5.85	6.1	7.2
0.4	28	3.05	3.65	5.1	6	3.05	3.65	5.1	6	3.25	3.85	5.3	6.25	6.5	7.7
0.45	27	3.3	3.9	5.45	6.45	3.3	3.9	5.45	6.45	3.5	4.15	5.7	6.75	7	8.25
0.5	26	3.55	4.2	5.85	6.9	3.55	4.2	5.85	6.9	3.75	4.45	6.1	7.2	7.5	8.85
0.56	25 & 24	3.8	4.5	6.25	7.4	3.8	4.5	6.25	7.4	4.05	4.75	6.5	7.7	8.05	9.5
0.63	23	4.1	4.85	6.7	7.9	4.1	4.85	6.7	7.9	4.35	5.1	7	8.25	8.65	10.2
0.71	-	4.4	5.2	7.2	8.5	4.4	5.2	7.2	8.5	4.65	5.45	7.5	8.85	9.25	10.9
0.8	22	4.7	5.6	7.7	9.1	4.7	5.6	7.7	9.1	4.95	5.85	8.05	9.5	9.9	11.7
0.9	21	5.1	6.05	8.2	9.7	5.1	6.05	8.2	9.7	5.35	6.3	8.5	10.2	10.6	12.5
1	20	5.5	6.55	8.8	10.4	5.5	6.55	8.8	10.4	5.75	6.75	9.2	10.9	11.3	13.3
1.12	19	5.95	7.05	9.4	11.1	5.95	7.05	9.4	11.1	6.2	7.35	9.8	11.6	12	14.2
1.25	18	6.45	7.6	10	11.9	6.45	7.6	10	11.9	6.7	7.9	10.5	12.5	12.9	15.2
1.4	-	6.95	8.2	10.8	12.7	6.95	8.2	10.8	12.7	7.2	8.5	11.3	13.3	13.9	16.4
1.6	17	7.55	8.9	11.6	13.7	7.55	8.9	11.6	13.7	7.8	9.2	12.1	14.3	14.9	17.6
1.8	16	8.15	9.6	12.4	14.7	8.15	9.6	12.4	14.7	8.4	9.95	13	15.4	-	-
2	15	8.75	10.3	13.3	15.7	8.75	10.3	13.3	15.7	9	10.6	13.9	16.4	-	-
2.24	14	9.4	11.1	14.2	16.7	9.4	11.1	14.2	16.7	9.9	11.7	14.8	17.5	-	-
2.5	13	10.1	11.9	15.1	17.8	10.1	11.9	15.1	17.8	10.8	12.8	15.8	18.6	-	-

**Notes :**

- For intermediate nominal conductor diameters, the resistance to abrasion figure of the next nominal diameter shall be taken.
- 1 N = 0.102 kg

**RESISTANCE TO ABRASION (UNIDIRECTIONAL SCRAPE) TEST FOR ENAMELLED ROUND COPPER WINDING WIRES (BASIS: IS 13730-- and IS 13778 – 3)**

Nominal Conductor Diameter		Requirements for											
		Part 13 PE (PEI) + PAI Wires Class 200				Part 20 Polyurethane Wires Class 155				Part 2 Bondable Wires Class 130			
		Grade 1		Grade 2		Grade 1		Grade 2		Grade 1		Grade 2	
		Min. (N)	Avg. (N)	Min. (N)	Avg. (N)	Min. (N)	Avg. (N)	Min. (N)	Avg. (n)	MIN. (n)	Avg. (N)	Min. (N)	Avg. (N)
(mm)	SWG												
0.25	33 & 32	2.55	3	4.15	4.9	1.95	2.3	3.5	4.1	1.95	2.3	3.5	4.1
0.28	31 & 30	2.75	3.25	4.45	5.25	2.1	2.5	3.7	4.4	2.1	2.5	3.7	4.4
0.315	29	2.95	3.5	4.8	5.65	2.3	2.7	4	4.75	2.3	2.7	4	4.75
0.355	28	3.2	3.75	5.15	6.05	2.5	2.9	4.3	5.1	2.5	2.9	4.3	5.1
0.4		3.45	4.05	5.5	6.5	2.7	3.15	4.6	5.45	2.7	3.15	4.6	5.45
0.45	27	3.7	4.35	5.9	7	2.9	3.4	4.9	5.8	2.9	3.4	4.9	5.8
0.5	26	3.95	4.65	6.35	7.5	3.1	3.65	5.25	6.2	3.1	3.65	5.25	6.2
0.56	25 & 24	4.25	5	6.8	8	3.3	3.9	5.6	6.65	3.3	3.9	5.6	6.65
0.63	23	4.55	5.35	7.3	8.6	3.55	4.2	6	7.1	3.55	4.2	6	7.1
0.71	-	4.85	5.7	7.8	9.2	3.8	4.5	6.45	7.6	3.8	4.5	6.45	7.6
0.8	22	5.15	6.1	8.4	9.9	4.1	4.8	6.9	8.1	4.1	4.8	6.9	8.1
0.9	21	5.55	6.55	9	10.6	-	-	-	-	4.4	5.2	7.4	8.7
1	20	5.95	7.05	9.6	11.3	-	-	-	-	4.75	5.6	7.9	9.3
1.12	19	6.45	7.6	10.2	12.1	-	-	-	-	5.15	6	8.5	10
1.25	18	6.95	8.2	11	12.9	-	-	-	-	5.55	6.5	9.1	10.7
1.4	-	7.45	8.8	11.8	13.9	-	-	-	-	5.95	7	9.7	11.4
1.6	17	8	9.45	12.6	14.9	-	-	-	-	6.35	7.5	10.4	12.2
1.8	16	8.6	10.1	13.5	16	-	-	-	-	6.8	8	11.1	13.1
2	15	9.2	10.9	14.4	17.1	-	-	-	-	7.3	8.6	11.9	14
2.24	14	-	-	15.4	18.2	-	-	-	-	-	-	-	-
2.5	13	-	-	16.4	19.4	-	-	-	-	-	-	-	-

Notes :

1. For intermediate nominal conductor diameters, the resistance to abrasion figure of the next nominal diameter shall be taken.

2. 1 N = 0.102 kg