

identification of individual conductors in a switchboard cable. The colour code consists of various combinations of eight basic colours, viz. blue, orange, green, brown, slate, white, red, and black, as shown in Table V.

The more common types of switchboard cable are

second wire is a single or double colour combination of the blue, orange, green, brown, slate series, whilst the third wire has the same colours as the second conductor, but with the addition of red.

Cable Waxing. The exposed ends of switchboard cable are invariably waxed to prevent moisture

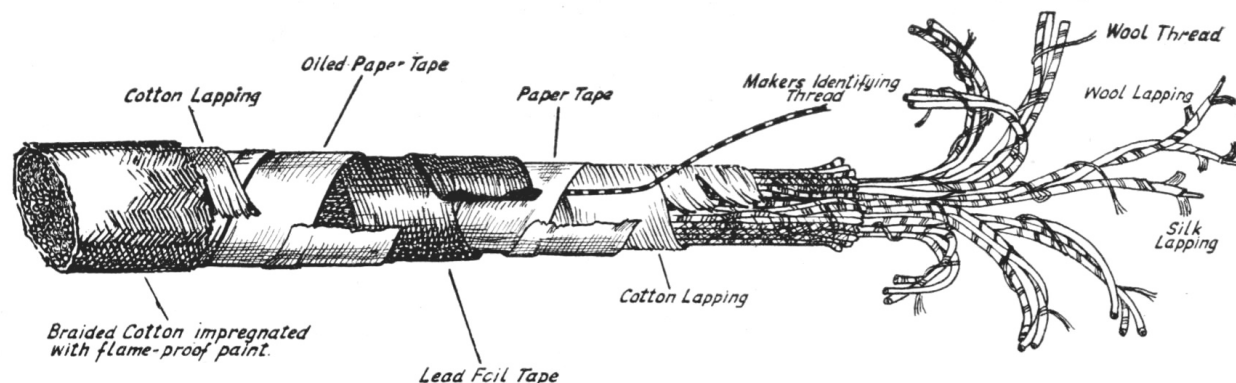


FIG. 434. MAKE-UP OF A TYPICAL SWITCHBOARD CABLE

shown in Table VI which gives the external diameter, general make-up, and colour code employed for each type. The 60-wire cable is possibly the most common size since it provides for twenty circuits each of three wires (two speaking wires and a third control wire). This cable is made up in the form of twenty groups of three wires. One of the three wires in each group is white, the

penetrating and impairing the insulation, and also to avoid the unravelling of the silk and wool coverings of the individual conductors. Good quality beeswax is always employed. The cable ends to be waxed are immersed in molten wax at a temperature between 300° F and 350° F. The conductors should remain in the wax until air bubbles cease to rise in order to ensure that the

TABLE V
COLOUR SCHEME OF SWITCHBOARD CABLES

Con- ductor No.	Colour	Con- ductor No.	Colour	Con- ductor No.	Colour	Con- ductor No.	Colour
1	Blue	31	Red, blue	61	Black, blue	91	Red, black, blue
2	Orange	32	Red, orange	62	Black, orange	92	Red, black, orange
3	Green	33	Red, green	63	Black, green	93	Red, black, green
4	Brown	34	Red, brown	64	Black, brown	94	Red, black, brown
5	Slate	35	Red, slate	65	Black, slate	95	Red, black, slate
6	Blue, white	36	Red, blue, white	66	Black, blue, white	96	Red, black, blue, white
7	Blue, orange	37	Red, blue, orange	67	Black, blue, orange	97	Red, black, blue, orange
8	Blue, green	38	Red, blue, green	68	Black, blue, green	98	Red, black, blue, green
9	Blue, brown	39	Red, blue, brown	69	Black, blue, brown	99	Red, black, blue, brown
10	Blue, slate	40	Red, blue, slate	70	Black, blue, slate	100	Red, black, blue, slate
11	Orange, white	41	Red, orange, white	71	Black, orange, white	101	Red, black, white
12	Orange, green	42	Red, orange, green	72	Black, orange, green		
13	Orange, brown	43	Red, orange, brown	73	Black, orange, brown		
14	Orange, slate	44	Red, orange, slate	74	Black, orange, slate		
15	Green, white	45	Red, green, white	75	Black, green, white		
16	Green, brown	46	Red, green, brown	76	Black, green, brown		
17	Green, slate	47	Red, green, slate	77	Black, green, slate		
18	Brown, white	48	Red, brown, white	78	Black, brown, white		
19	Brown, slate	49	Red, brown, slate	79	Black, brown, slate		
20	Slate, white	50	Red, slate, white	80	Black, slate, white		
21	White	51	Red, white				
22	Red						

wax has penetrated the cable at the butt and formed an effective seal against moisture. When completely waxed the cable is removed and the surplus wax is allowed to run off. It is important that the wax should be applied at the correct temperature. If the temperature is too low, then the wax does not penetrate the cable sufficiently, but excessive temperature, on the other hand, results in the wax becoming unfit for further use. A thermostatically controlled heater is the best

impregnated with beeswax. The gauge of wire most commonly used is 9.2 lb/mile (23 S.W.G.), although 6.4, 7.7, and 12.5 lb/mile conductors are occasionally used. Wire is available either as single conductors or as twisted pairs, and a range of colours similar to those of switchboard cable is provided.

In recent years a new type of insulated wire (*switchplate wire*) has been introduced for the internal wiring of relay groups and selectors in

TABLE VI
COMPOSITION OF SOME COMMON TYPES OF SWITCHBOARD CABLE

No. of Wires	External Diameter of Round Cable (in.)	Make up			Colours of Wires (See Table V)		
		Singles	Pairs	Triples	Singles	Pairs	Triples
6	0.3	—	3	—	—	21 + 1 to 21 + 3	—
12	0.3	—	6	—	—	21 + 1 to 21 + 6	—
20	0.38	—	10	—	—	21 + 1 to 21 + 10	—
31	0.4	1	—	10	101	—	21 + 1 + 31 to 21 + 10 + 40
41	0.43	1	20	—	101	21 + 1 to 21 + 20	—
60	0.51	—	—	20	—	—	21 + 1 + 31 to 21 + 20 + 50
61	0.51	1	—	20	101	—	21 + 1 + 31 to 21 + 20 + 50
80	0.6	—	40	—	—	22 + 31 to 22 + 50 21 + 1 to 21 + 20	—
100	0.68	—	20	20	—	22 + 1 to 22 + 20	21 + 1 + 31 to 21 + 20 + 50
150	0.82	—	—	50	—	—	21 + 1 + 31 to 21 + 20 + 50 22 + 1 + 31 to 22 + 20 + 50 51 + 1 + 31 to 51 + 10 + 40
200	0.95	—	100	—	—	22 + 31 to 22 + 50 22 + 61 to 22 + 80 21 + 1 to 21 + 20 21 + 31 to 21 + 50 21 + 61 to 21 + 80	—

means of wax heating and is usually employed on large construction jobs. Particular care must be taken to avoid the risk of fire when heating the wax.

Switchboard or Switchplate Wiring. The interconnexion of the various components on one mounting plate and the connexions between adjacent mounting plates is effected by individual wires. The most common type of wire for this purpose (known as *switchboard wire*) consists of a conductor of hard-drawn copper which is tinned and uniformly covered with two lappings of undyed natural Tussah silk or cellulose acetate rayon, and then one lapping of cotton is laid on in the alternate direction. The whole insulated wire is thoroughly

automatic exchanges. It has insulation qualities equal to the silk and cotton switchboard wire, but it is easier to handle than the latter. It is supplied in one gauge only, i.e. 6.4 lb/mile (25 S.W.G.), and the tinned conductor is lapped with undyed acetylated cotton with a final coarse braiding of the same material. The completed wire is then impregnated with beeswax. As in the case of switchboard wire a colour range is available and the same wire with the addition of a coating of enamel over the tinning is provided for use under humid conditions.

When the connexions between apparatus tags are very short, it is difficult to maintain the ordinary